COAL AGE

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Pulverize Your Own

ANNOUNCEMENT has been made that a company is to be formed for the pulverizing of coal and the delivery of the fuel thus pulverized to the cellars of homes. The company proposes to put its energies into developing a market for domestic pulverized coal in and around Kansas City. A capacity of 180 tons a day will be provided at once, and this will be increased to 360 tons in a short time. Steel tanks will be located in the basement of each house as close to the furnace as possible and their contents will be doled out to the burner by an electrically-driven "syncronator."

Other companies of a similar character will be organized soon in Omaha, Buffalo and Salt Lake City. The coal will be delivered by tank wagons, from which it can be unloaded much in the same way as fuel oil. The success in the West of the sale and delivery of pulverized coal demonstrates clearly that this pulverized fuel is well suited for all kinds of heating purposes and that it can be delivered pulverized without difficulty.

Are the coal producers going to let this chance to enter into a manufacturing business pass out of their hands? Why should the fuel be prepared anywhere but at the mines? From that point it could be delivered by specially-constructed railroad cars or by motor trucks, according to the distance to be traversed. Mines that are making an excessive quantity of slack and the coal from which is not the best kind of boiler fuel could enter this business with assurance of success, if, of course, the pulverized fuel they make is not unduly subject to spontaneous combustion. Especially would it be advantageous to avoid mixing coal and thus producing a product of uncertain quality and one more likely to ignite spontaneously.

The project is worthy of the serious consideration of coal operators. Why should the making of pulverized coal be allowed to slip away as has the generating of electric power and the manufacture of byproduct coke and carborundum? Nowhere can power be obtained cheaper than at the mine, where the poorest kind of fuel can be used advantageously for its generation, either pulverized or by means of automatic stokers, and where the costs of living are lower to the workmen than in cities and where land values for plant and storage are at a low limit.

Perhaps within ten years houses will be quite generally fitted to burn coal as dust, for there is no question that this method of combustion, if properly controlled, will give a minimum of smoke and a maximum of efficiency. Is it too much to surmise that the use of such coal may be made obligatory by municipal ordinance? If this is so, it will be a great pity if the work of pulverization is so controlled by non-producers that the producing firms will be unable to enter the business and will then receive from these public-utility fuel pulverizers the same kind of pressure now being brought by present-day public utilities to have the price regulated by Federal and state boards. Surely then will be appreciated the advice "Pulverize your own."

Building Up Foreign Trade in Coal

TO FACILITATE and promote their efforts in the foreign trade members of the Wholesale Coal Trade Association of New York have organized a corporation called the Association of American Coal Exporters. The step is propitious and certain to be beneficial if carried out in the spirit set forth in the official announcement. The bulk of our foreign trade in coal today is on an unstable basis and it behooves the coal men of the East to establish secure and permanent relationships with the demand abroad if the business is to be maintained. So dire is Europe's need for fuel today that any coal can be sold and prices and terms to suit the seller be had.

Within a few years equilibrium will be re-established in the world fuel market and past service will be all important in determining the allocation of business thenceforth. The new association has as part of its program the inspection of coal to insure to the foreign buyer the grade and quality of coal he desires and has purchased, and also to bring pressure upon the American exporter to see that his conduct with those in this country and abroad is such as to reflect nothing but credit upon the business integrity of the trade.

The well informed have recognized the temporary character of the present export market and far-sighted concerns with ambitions for the future of their foreign business have been laying plans for years ahead. The older and larger coal-exporting companies already have foreign connections and several of the younger companies in this trade have the best men available abroad, not to sell coal but to study and become acquainted. Whole-hearted co-operation through the new export corporation will give to members the combined experience of all and will the sooner afford that fund of data so essential to successful operation in so large a field.

More than a year ago a determined effort was made to organize the export trade under the Webb Act, but nothing came of the venture. The prime movers then were the larger companies, most of which had been in the foreign trade in the past, and one of the problems they were considering was how to give the smaller shipper equality of opportunity in such an organization. The smaller concerns appear now to be solving that for themselves, for the new corporation, in the beginning at least, is made up of those who because of lack of strength and experience find a need of mutual co-operation.

Where Is That Book of Ethics?

WHEN the employer decided, on the simple basis of supply and demand, what wages should be paid the employee, there was little difficulty in determining what that rate should be. Whatever would induce the working or the professional man to enter into a verbal or written contract of employment was considered the correct compensation for the employer to pay.

Just recently when a wage controversy was being arbitrated a decision was rendered allowing a certain electric railroad to continue to pay the wage it had been paying, the arbitrators declaring that the electric road must have been paying a fair wage or it would not have been able to induce men to leave other employment to enter its service. It seems a decision not without its elements of justification.

The public has decided that the law of supply and demand must be laid aside, yet it has elaborated no basis by which it may be replaced. We are henceforth to look to ethics for a determination of wages. But we have no ethical standards, no definitions of what is ethical economically. Shall there be a graduation of pay to suit gradations in intelligence and effort? Shall wages be advanced by flat or by percentage increases? Shall the steady worker get more or only as much as the one whose opportunity is irregular? Shall increases be based on the rates paid in the past or shall the status before the last revision be determinative? Shall the man working in a difficult place get more than the man working in an easy one for the same quantity of product? The solution arrived at is sure to be seriously upset by the law of supply and demand, which is thought to be dead but is only sleeping.

An article is usually worth what people will pay for it. The ethical price concerns no one. The man who cannot pay an ethical price for it, or can buy the article cheaper from some one who can produce it at less expenditure of effort, will not pay the figure demanded, and hence the poor fellow who would have made it is unethically laid idle. A man working in a mine with coal hard to drill, shoot or break, by all *prima facie* elements of ethics should be paid more wages per ton, and even per day, than a man working in a soft seam. The man selling a coal of slaty consistency, having to pay more wages, should get a price accordingly.

According to ethics, he should, but will he? Only if the hard material is worth more than the softer. Natural laws have a way of paying little attention to what we poor mortals call ethics. The laws of survival of the fittest may not be ethical on their face, but they wipe out the needless industry, the concern which is making what the public does not want or what the public is unwilling to buy at the price at which it must be produced.

Jett Lauck's Dangerous Suggestions

IN A recent article written for a New York daily, W. Jett Lauck, protagonist for the coal-mine workers, proposes that three boards be formed. He would have an "Industries Board, which would determine through its various divisions, corresponding to the several basic industries, the cost of production of commodities and the quantities of basic articles such as iron ores, copper, cotton and wool, etc., which should be allocated to other industries and the price at which they should be sold. This board should also through its divisions such as clothing, shoes, textiles, coal, sugar, etc., control the distribution and prices of articles throughout their manufacture and their entrance into the retail trade and ultimate consumption."

Other boards which he would advocate are a Food Administration, which "should have control of the production, distribution and price fixing of all foodstuffs from the producer through the jobber to the retailer and the consumer," and a Finance Administration, which, "working in co-operation with the Treasury and the Federal Reserve Board, should determine how the capital and credit of the country should be apportioned until a return of normal conditions. It would thus make sure that credit and capital were not being used for speculative or luxurious uses at a time when they are so grievously needed for essential industries."

"We hold," says the Declaration of Independence, "these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness." It has long been recognized that the equality was not of natural gifts, for men are of quite equal mental, moral and physical endowments. W. Jett Lauck must have believed in this inequality or why did his bureau charge so liberally for his defense of the anthracite mine workers?

It refers most evidently to equality before the law, to the equal rights of Americans and British to engage in the manufacture of iron without restriction as well as to other legal equalities. Mr. Lauck would have us believe that those who make clothes, shoes and textiles and who produce coal, sugar, iron ore, cotton, copper, wool and foodstuffs and who trade in these things are of other stuff than men who make "speculative or luxurious products." They are men who may not be allowed the freedom that is granted to the manufacturer of organs, pianos, phonographs, motion pictures, toys, firecrackers and the like.

In fact, to judge by Mr. Lauck, the business of the law is to divide citizens into two groups, useful and ornamental, making the first serfs of the second. The first group must sell to the second group at cost plus a reasonable profit, yet this latter group is allowed to charge what it will for the product made available by the labor and industry of the first.

One cannot pass over his obvious attempt to class the first-mentioned industries as not speculative. One cannot imagine what else he can term the copper and clothing industries, and even the soft-coal business in normal times. Wall Street brokers always so regard them.

However, passing up that consideration, Mr. Lauck believes that the only way to help the staple industries is to deny money to those which are speculative and manufacture luxuries. Does he really expect that money will flow into the staple industries, crippled and regulated as he would have them? The railroad industry, trimmed in the precise manner in which Mr. Lauck would trim the other useful industries, does not find investments moving its way, though the Federal Reserve Board, in the way Mr. Lauck approves, is looking with disapproval on the automobile and the luxury trades generally and is limiting their loans. Loans to the essential industries would be even more closely limited by the crippling restrictions put upon them than they ever could be by any legal limit short of an entire denial of credit.

Railway Traffic Makes a New Record for August

Traffic handled by American railroads during August, according to reports compiled by the American Railroad Association, were larger in volume than ever before during that month. During the four weeks ended Aug. 28, 3,853,822 cars of commercial freight were loaded, compared with 3,580,367 cars in the same period of 1919 and 3,849,026 cars in 1918, reports showed. During the week ended Aug. 28 the total car loading was 985,064, as against 951,653 for the corresponding week in 1919.

Cancels Delinquent Taxes for Prompt Payment of This Year's

Mining companies of Mexico owing taxes for periods before Jan. 1, 1920, may have them canceled if they will pay taxes levied upon them for 1920 before Nov. 1, according to a presidential decree issued Sept. 13. Another decree issued by the presidential office extends the time for filing claims for damages on account of revolutionary activities in Mexico, until Feb. 6, 1921.

Commission Orders Additional Reconsignment Charges

Orders of the Interstate Commerce Commission provide that shipments reconsigned where back hauls or out-of-line hauls are concerned will be subject to the regular rates plus a reconsignment charge of $5 a car. The order is designed to curtail the reconsignment practice with a view of facilitating movement of freight and making available more cars.

Rail Rates May Be Corrected on One Day's Notice

An order of the Interstate Commerce Commission provides that where railroads have made errors in increased rates recently allowed, the same may be corrected on one day's instead of five days' notice.

Mine-Compensation Rating To Drop

The Rating Bureau of the Workmen's Compensation Board of Pennsylvania is expected to announce, before long, a reduction of about 10 per cent in the coal-mine rates for both anthracite and bituminous regions. The new rates will take into account wage increases as well as experience during the year. The final tests and inspections are now being made.

Ohio Mine Fatalities Increase This Year

More fatalities in the mines of Ohio have been recorded this year than during any year since 1913, according to Jerome Watson, state mine inspector. There have been 73 deaths thus far this year and nine out of every ten were due to falling slate. This is said to be due to the reopening of abandoned mines which were in bad condition.

Factory Wages Receding

Average weekly earnings of $28.71 in August for New York factory workers, as compiled for the State Industrial Commission from the reports of 1,648 manufacturers employing 600,000 workers, while marking an increase of 22c. per capita over July, show in analysis that the factory hands did not directly benefit for the month, but the average was raised by the increase in the railway shop payrolls. General factory averages were slightly below July's. Factory reductions in August occurred in the following lines: Automobiles, paint and varnish, cotton goods, men's clothing, men's furnishings and in canning. Gains for the month were noted in the glass, firearms, heating apparatus, railway supply and repair, shipbuilding, fur goods, women's clothing and women's furnishing industries.

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

France Fixes Prices for Coal Imported from America

The Minister of Public Works of France has fixed the following prices on American coal, according to advices to the Department of Commerce from Paris: C.i.f., French ports, September contracts, $30; three months delivery, $28; six months to one year delivery, $25; for delivery at Mediterranean ports a differential of $2 additional is allowed.

Supreme Court to Decide Validity Of Lever Act

The validity of the Lever Act will be the subject of arguments before the U. S. Supreme Court on Oct. 11. While the case which brings the matter before this tribunal is that of the Oglesby Grocery Co., the arguments will be applicable to several coal cases.

International Union Radicals Beaten for Nomination

The radical element in the United Mine Workers of America has failed in its efforts to nominate national officers of the organization. The board of international tellers announced Sept. 21 that President John L. Lewis, conservative, had been renominated by a vote of 926 to 484 over Robert H. Harlan of Washington for International president. Vice President Philip Murray of Pennsylvania, defeated Alexander Howat of Kansas, for the nomination for International vice president, 740 to 667. William Green, International secretary and treasurer, was renominated without opposition.

Blames British Miners for Fall In Exchange Rate

Discussing reasons for the fall in the American rate of exchange, the London *Chronicle's* financial editor says the action of British miners is largely responsible. Continental countries, he adds, fear, in view of the threatened strike, that they will be unable to get British coal, and realize they may have to buy it in New York. They therefore bought American exchange through London and depressed the rate thereby.

Kansas Miners Lose 28 Per Cent Of Wages in August

Kansas coal miners lost 28 per cent of their wages and the state lost nearly 200,000 tons of coal as a result of strikes in Kansas during August, according to a report issued by James Sherwood, state mine inspector. The figures cover the actual loss of time in every mine in the state. The total number of men involved in strikes was 5,340.

Iowa Union Miners Accept New Wage Scale

Iowa union miners in session at Des Moines Sept. 22 reversed their decision of Sept. 21 and voted to accept the wage contract signed by their representatives and Iowa operators Sept. 7.

Traffic Record Made in Panama Canal During August

All traffic records since the opening of the Panama Canal were broken during the month of August. Three hundred ships passed through the waterway, the toils aggregating $936,209.

J. D. Battle Joins National Coal Association Traffic Section

J. D. Battle has been added to the personnel of the traffic section of the National Coal Association. Mr. Battle has been employed by the Commission on Car Service of the American Railroad Association.

Where Darkness is Turned to Davlight

EVERYONE who has had experience in rush construction work knows the difficulties and dangers under which the night shift labors. In his everyday work man depends more upon his sight than upon any other sense. Destroy or render this useless and the average man is practically helpless. A workman can do only what he can see how to do.

When emergency demands night work, particularly if this be construction where heavy weights must be dealt with and scaffolds of various heights employed, ample illumination is a requisite to both efficiency and safety. The illustration above shows the start of construction of the Loree breaker of the Delaware & Hudson Co., after the destruction of the original building by fire.

The output of several mines passed through this breaker. When the wooden structure burned it was determined to rebuild of concrete and steel to avert any possible repetition of the catastrophe. Since interruption to operation meant heavy losses both to the company and the men the greatest possible speed in construction was desired. Accordingly work was prosecuted day and night without interruption.

As a result of the excellent distribution and volume of light employed the night shift was enabled to accomplish almost as much as either of the other two shifts, three shifts being worked daily. Because of continuous prosecution of the work and the whole-souled co-operation of all concerned, the new structure was completed and coal was being prepared several days sooner than had been thought possible when construction was started.

Simplicity, Labor Economy and Freedom from Vibration Mark the Alliance Breaker

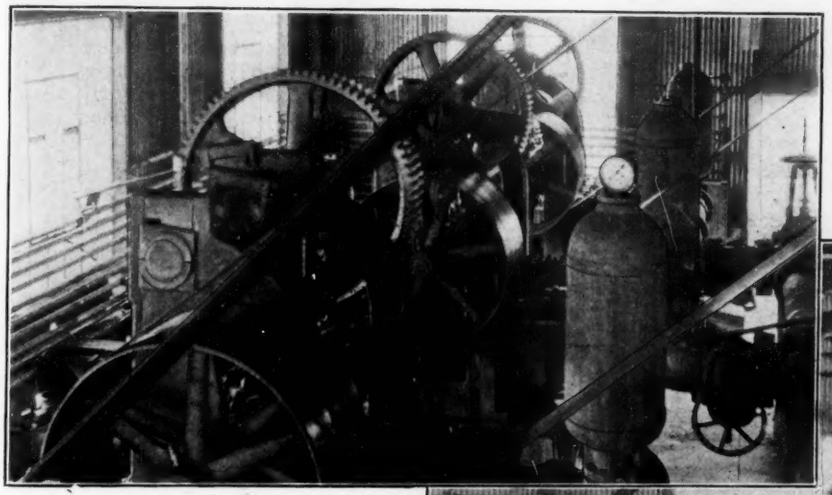
Only the Lip-Screen Material and Waste Rock Are Re-elevated — Rotary Dump Empties Mine Cars—Compressed-Air Uplift Gates Are Used on Hopper—Pockets Are Ranged at Right Angles to Railroad—Belt Delivers Coal to Railroad Cars

By Dever C. Ashmead
Wilkes-Barre, Pa.

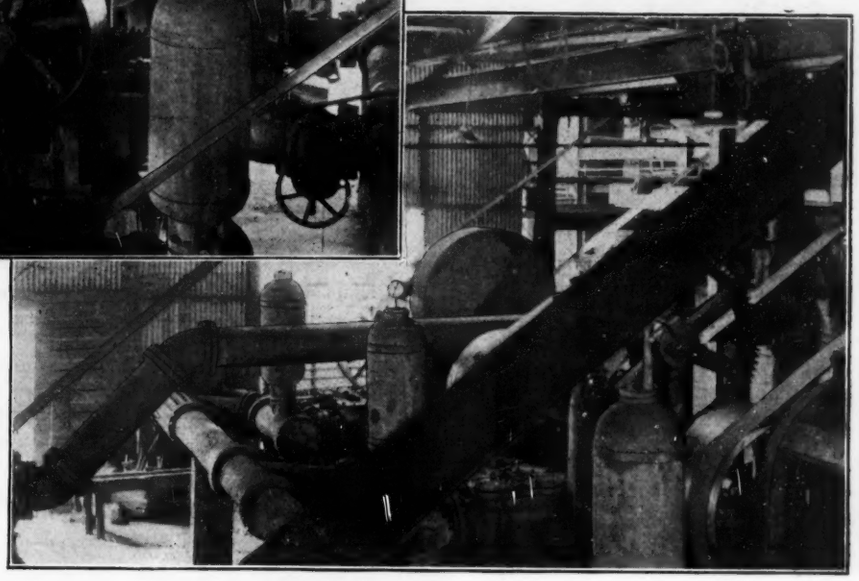
As time progresses there is a steady improvement in the construction of breakers as well as in the methods followed in the preparation of anthracite coal. The trend of the times is toward simplicity of preparation so long as such simplicity lends itself to thoroughness. In the design of a breaker as well as the processes followed in and about the mines, the human factor must now be considered carefully. This is because of the existing shortage of labor and its increased cost. Every device that can be installed to reduce the number of men employed is now a distinct aid to the coal-mining and all other industries. Such devices release workers to more productive employment and tend to increase the output per man.

The designers of the Alliance breaker of the Alliance Coal Mining Co., at Kaska, Pa., have kept constantly in view the idea of reducing to the lowest possible point the number of men necessary to operation. It appears as if they had reached an almost irreducible minimum in this respect although they probably have not, because each time such a condition seems to have been attained some other designer comes along and reduces the "irreducible" still further.

Other factors must be considered beside a reduction in the number of men employed. Among these is accessibility of machinery so that in case of breakdown it can easily be reached and readily repaired. Any delay, regardless of its cause, reduces output and to some extent lessens yield per man. Another factor requiring careful consideration is fire protection, for when a breaker is burned a big mine is closed down until such time as either a new building can be erected or a temporary one provided. This danger is now being met by steel construction.



Pumproom Interior
Room contains six Aldrich pumps each with a capacity of 1,500 gal. of water per minute. Three are used for pumping mine water and three for fresh water.



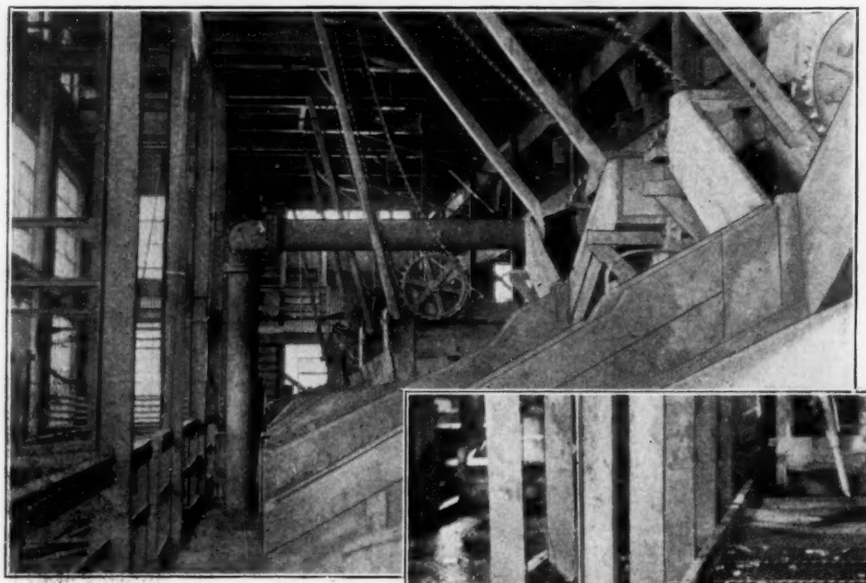
Another View of Pump Room
By means of two lines of shafting each set of three pumps is driven by one 150-hp. General Electric motor.

Unnecessary Re-Elevation of Coal Avoided

Because the cost of producing coal has mounted without a corresponding increase in the selling price, the question of breakage must be carefully considered. Extra or unnecessary handling of the mine product must be avoided so far as possible in order to decrease degradation. This can be accomplished by constructing the breaker of such a height that the flow through it is in the downward direction throughout with no unnecessary re-elevating of the coal. Furthermore, when it is necessary to pass material from a high to a much lower point,

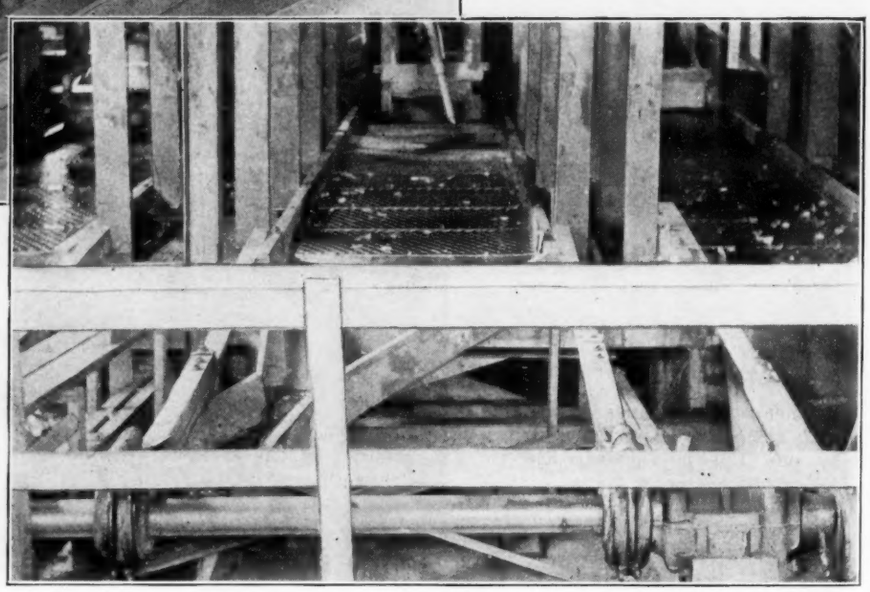
means must be devised to avoid unnecessary free drops, and chutes should be placed at such inclinations that the coal will not attain great sliding velocity. The corners of the chutes also should be rounded so as to avoid breakage as far as possible. Coal may be easily broken down from larger to smaller sizes, but the reverse process, of course, is impossible.

One feature that must be carefully watched in breaker design and construction is the avoidance of vibration. Nothing can wreck a building so quickly or throw machinery out of line, causing continual repair, as unnecessary vibration. This may be guarded against by proper arrangement of machinery so that the periodic oscillation of one piece of equipment may counteract that of another. Thus far generalities have been discussed. Let us now consider the Alliance breaker and see how far it fulfils the conditions outlined.



Jig Floor in Kaska Breaker

In the background are the Elmore jigs, which are used for preparing the larger sizes of coal, egg coal being jigged in the one furthest from the camera. In the foreground are German jigs which clean the smaller sizes.



Egg, Stove and Chestnut Screens

Shaker screens that separate the egg, stove and chestnut coal. Like all of the rest of the machinery, these shaker screens are readily accessible, making it easy to repair them. Note the safety railing in front of the eccentrics.

Enough Wood to Need Fire Protection

The building itself is of steel construction with siding of corrugated sheet iron, making the structure fireproof. Of course, some small quantity of wood has been used. To protect it against fire, sufficient standpipes and hose connections are provided so that in case it should become ignited the fire could not gain headway against the streams of water that could be turned upon it.

Ample height is provided at the start so that in no case is it necessary to elevate the coal during the process of preparation. The material moves by gravity from the top of the building to the bottom. The only elevator is that which handles the condemned material and the screenings from the lip screens below the pockets. Accessibility to all parts of the machinery is provided and the machines may be readily repaired.

The breaker drive is divided into two main units, both of which are controlled from one central switchboard. The shaking screens are driven in one direction while the jigs are driven in another. To a large extent this arrangement tends to counterbalance vibration so that even at the very top of the building it is not particularly noticeable.

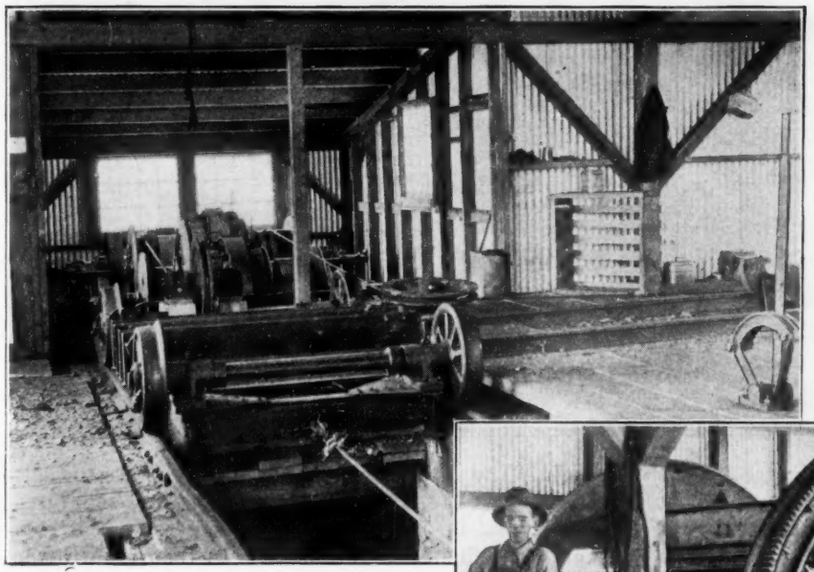
On page 674 is a photograph of the Alliance breaker. Coal is brought from the various shaft and drift mines by trolley locomotives to the dumphouse to the left of the building. Here the loads are released and allowed to move by gravity to a point just outside the building, whence a go-devil, operated by a man inside the dumphouse, brings each car to a dog that stops and holds it until such time as it is released. The car then moves by gravity to a transfer table, shown on page 673. This illustration also shows the four-drum electric engine that operates both the go-devil and the transfer table.

Coal Is Discharged by Rotary Dump

The transfer table moves the car across the room and delivers it to the track that leads to the rotary dump. The car moves off this table and into the dump by gravity, kicking off the empty. Heyl & Patterson, Inc. furnished the dump, which accommodates one car at a time and can operate at the rate of four cars a minute.

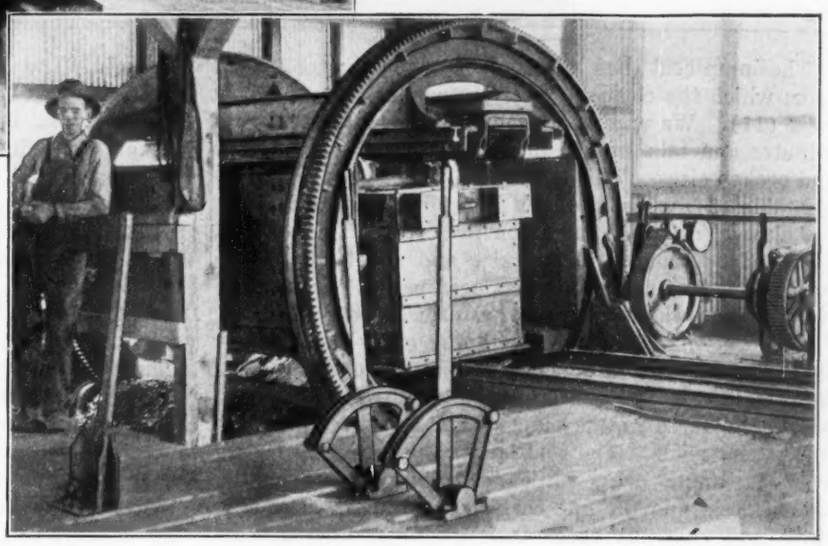
Each empty car runs off the dump to the foot of a car haul which raises it to a sufficient height for it to move by gravity to the locomotive siding. Three men are required to operate this dumping outfit. One is necessary to manipulate the go-devil and the transfer table, another operates the dump and releases the car from the table, while the third man uncouples the cars and couples them up again when they have been discharged and returned.

The rotary dump discharges the coal into a large concrete bin, into which material reclaimed from the coal banks also can be dumped. Since the track from the culm banks is of standard gage the bin also may be used, if necessary, to receive coal from railroad cars. Thus, should the emergency arise, coal might be brought from some other mine to this breaker for preparation. The entire pocket is of concrete and steel, making it fireproof. The gates are operated by compressed air.



Transfer Carriage

This is used to transfer cars from the load-track to the track which leads to the rotary dump. In the rear is a four-drum electrically-actuated engine which operates the transfer carriage and go-devil. In the immediate foreground it will be noted that the track on which the transfer operates takes an abrupt rise. This raise tilts the table so that when the car is released it will run by gravity to the dump.



Rotary Dump

A Heyl-Patterson rotary dump with mine car in dumping position. The coal in the pit is run into gunboats and hoisted to the top of the breaker. In the foreground will be noted two levers which operate the transfer carriage and go-devil. The levers of the rotary dump are not shown, nor is the motor by which the dump is rotated.

The gunboat plane is prominently shown on page 674. The top of this plane is 188 ft. above the ground level. The gunboats are made entirely of steel and have a capacity of 240 cu.ft., equal to about two and one-half mine cars. They are operated by a Nordberg single-drum hoist driven by a Westinghouse 400-hp. 440-volt motor operating on 60-cycle 3-phase current at 500 r.p.m. Gunboats may be hoisted at the rate of 100 per hour. They discharge into a large hopper at the head of the breaker, which has a capacity of six gunboat loads.

From this hopper the coal is fed to a bull shaker and thence to a picking table. The automatic feed that regulates the speed with which the coal goes to the shaker is interesting. Formerly this was operated by a compressed-air cylinder that raised and lowered a gate. This, however, was not found to be entirely satisfactory and a new feed was designed.

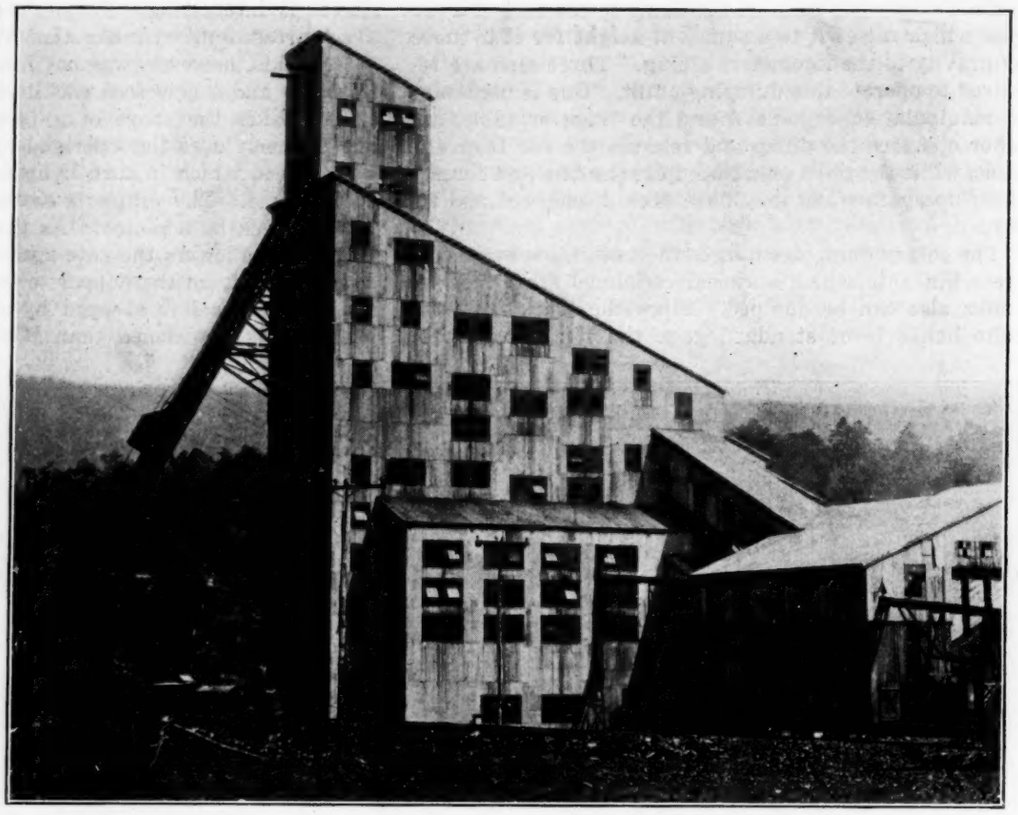
This takes the shape of a feed gate similar to the one formerly used but operated by a crank attached to a crosshead which in turn is attached to the upper end of the gate. The crank is actuated by a large gear wheel driven by a pinion. As the large wheel revolves it raises and lowers the gate automatically, allowing the coal to pass from the hopper to the bull shaker. Since the flow of coal is stopped by raising the gate, less breakage is occasioned than if the gate was lowered for that purpose, as such a motion would have a tendency to crush the material. The raising gate simply pushes its way up through the coal, shoving the material to one side without any crushing effect.

On the accompanying flow sheet, for the sake of convenience figures will be found corresponding with those in the text. Thus each step through which the coal passes during preparation is successively numbered upon the flow sheet, making it an easy matter to follow the preparation from start to finish.

After the coal has been raised by the gunboat hoist (2) from the rotary pocket (1) to the top of the breaker and dumped (3) into the large hopper (4) it is fed by the automatic feed (5) onto the bull shaker (6). Here it is separated on two decks, the lump coal being taken off the upper deck. From the lower deck steamboat and broken are removed together, while the finer coal passes through.

Kaska Williams Breaker

This breaker is built of steel and covered with corrugated sheet iron. As will be noted in the pictures of the interior of the breaker, plenty of light is provided at the proper points. At the extreme left of the breaker is the house over the rotary dump, while the extension at the right is the rock house. The bottom of this breaker cannot be seen, as the rock dump in the foreground hides it. The building is 188 ft. high.



The lump coal then passes over a picking table (7), from which the cleaned material goes to a set of No. 1 rolls (11). We will now leave the lump coal for a few minutes and take up the preparation of the steamboat and broken sizes. This material likewise goes to a picking table (8), where the rock is removed by hand, while the cleaned material passes on to a pair of No. 2 rolls (12). This crushes to egg size and smaller this material as well as that which has been passed through the No. 1 roll, to which reference has already been made.

The coal that passed through the lower deck of the shaker (6) goes to a hopper (9) and thence to a set of shakers (10). The coal from the No. 2 rolls (12) likewise is delivered to this same shaker and three preparations there made. The coal larger than pea size passes over the upper deck, while pea coal passes over the second deck, and the fine coal goes through. The egg, stove and chestnut coals then go to another set of shakers (13) and are all separated on two decks. The egg coal then goes to the egg jigs (15), from which the cleaned coal passes to the egg pocket. Two types of jigs are employed in this breaker—Elmore machines are used for the larger sizes while German types treat the smaller grades, such as No. 1 buckwheat, barley and rice. The stove and chestnut coals are treated in a manner exactly similar to that accorded the egg. In all three of these cases the coal after being jigged is hand picked and the rock that the jig failed to take out is removed.

Small Coal Prepared by Jigs and Shakers

The pea coal from shaker 10 goes directly to the pea (28), from which the coal proceeds to its pocket. This size as well as smaller sizes is not hand picked. The fine coal from shaker 10 goes to another shaker (14), having three decks, where No. 1 buckwheat, rice and barley coals are taken off, while the finer size passes through. The three sizes above mentioned pass to their respective jigs (18, 19 and 20), while the rock separated from the coal in the jigging process goes to the rock pocket. The fine coal from shaker 14 then goes to the mud shaker (21) where the culm is separated from the coal. This coal is delivered to the elevator (29) and taken to hopper 9, under the bull shaker, for re-treatment. The culm goes to the pump house and is pumped to the mud dam.

As the coal is loaded into railroad cars it passes from the pocket over a set of screens, which remove the undersized material. This is delivered to the large elevator (29) mentioned above. In jigging the coal some degradation, of course, takes place and the fine material is separated from the sized coal and taken back by this elevator for re-treatment.

If for any reason no orders should be on hand for egg or stove coal, arrangements are made whereby both or either of these sizes can be passed to a set of rolls (30) and be crushed. From here they are sent to the elevator and taken back for re-treatment. Furthermore, if the coal is of poor quality and full of refuse it is sent from the last set of rolls (30) and crushed finer and then sent to the big elevator (29).

Rock Chute Protected by Rock Cushion

The rock from the two picking tables (7 and 8) is sent to the rock chute, which extends from the upper picking table to the rock pocket near the bottom of the breaker. There is a right-angled turn and a drop of about 5 ft. at one point in this chute, and it was found that the rock in sliding down the chute gained such velocity that it struck the side of the chute violently and wore out the bottom of the chute at the point of fall. In order to overcome this a piece of 12 x 12 timber was placed across the chute just below the turn and at the bottom of the drop.

The first rock that came down the chute lodged here and made a bed for the rest of the material to fall upon. In other words, a cushion of rock was placed for the material coming down the chute to drop onto, and instead of wearing out the bottom of the chute and the sides, all the wear incurred came upon the rock itself, which was replaced by fresh material automatically.

Pockets Deliver to Belt and Belt to Car

The rock from the jigs likewise is sent to the rock pocket, whence it is loaded out and taken to the rock dump. The building containing the rock pocket may be seen at the extreme right of the cut on page 674.

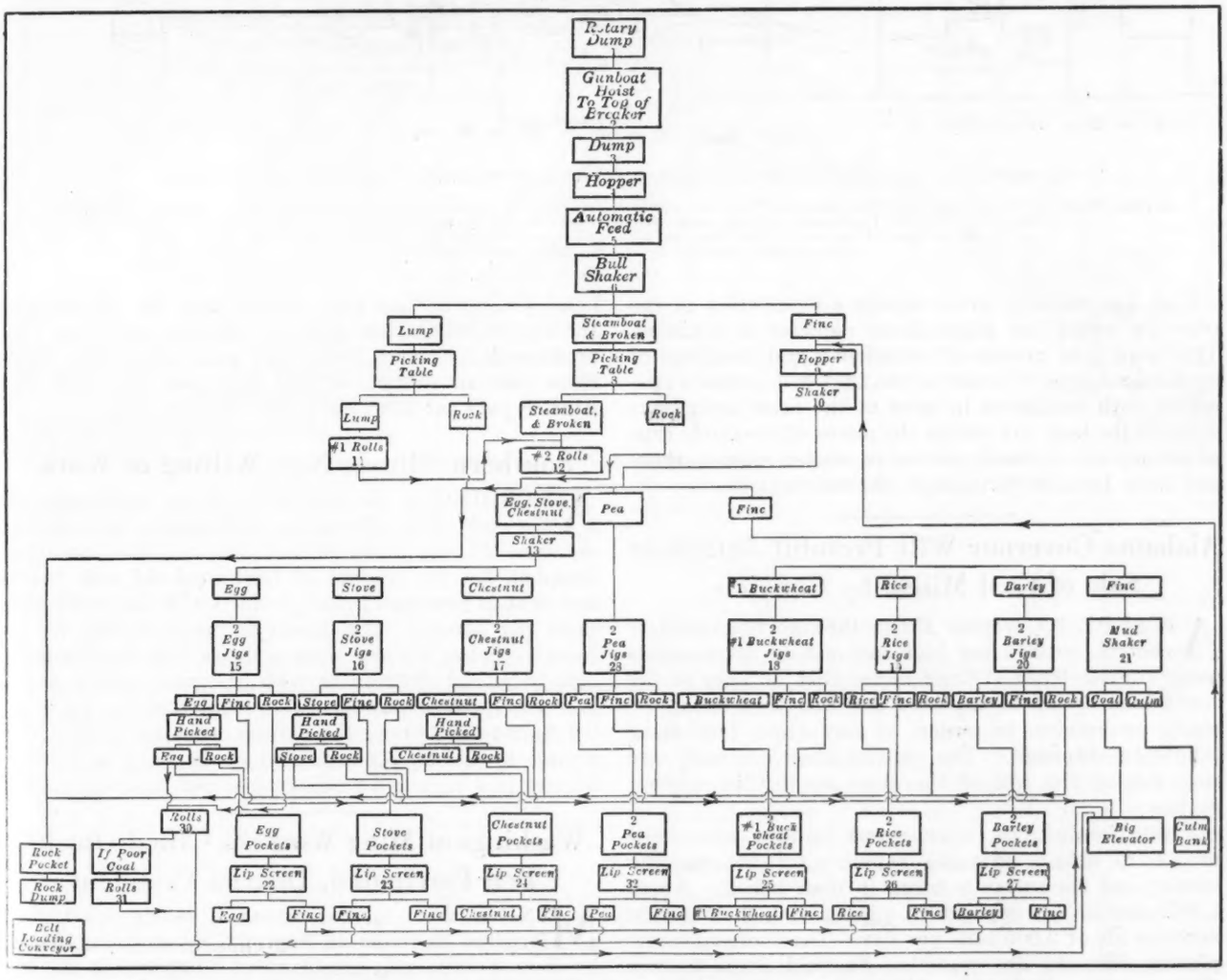
A somewhat interesting and rather unusual detail is the method employed in loading the coal into the railroad cars. The coal pockets are at right angles to the railroad track instead of being parallel to it. When it is desired to load a given size of coal, the proper pocket gate is opened and the coal discharged onto a 48-in. belt conveyor, which delivers it into a chute, which in turn discharges to the railroad car. The gate to the pocket and the operation of the belt conveyor are both under the control of one man.

This breaker is unusual by reason of the fact that the entire equipment is driven by one breaker engine, an electric drive being employed. Two main and two auxiliary units are installed. One 250-hp. General Electric motor operating on 3-phase 60-cycle alternating current at 440 volts is used to drive the jigs. Another motor of 500 hp. of the same make is employed to drive the main breaker machinery. These two drives are placed at right angles to each other, thus reducing vibration somewhat. In addition to these units there is a motor driving the gunboat hoist and one driving the pumps, also a small 40-hp. machine driving the loading conveyor belt.

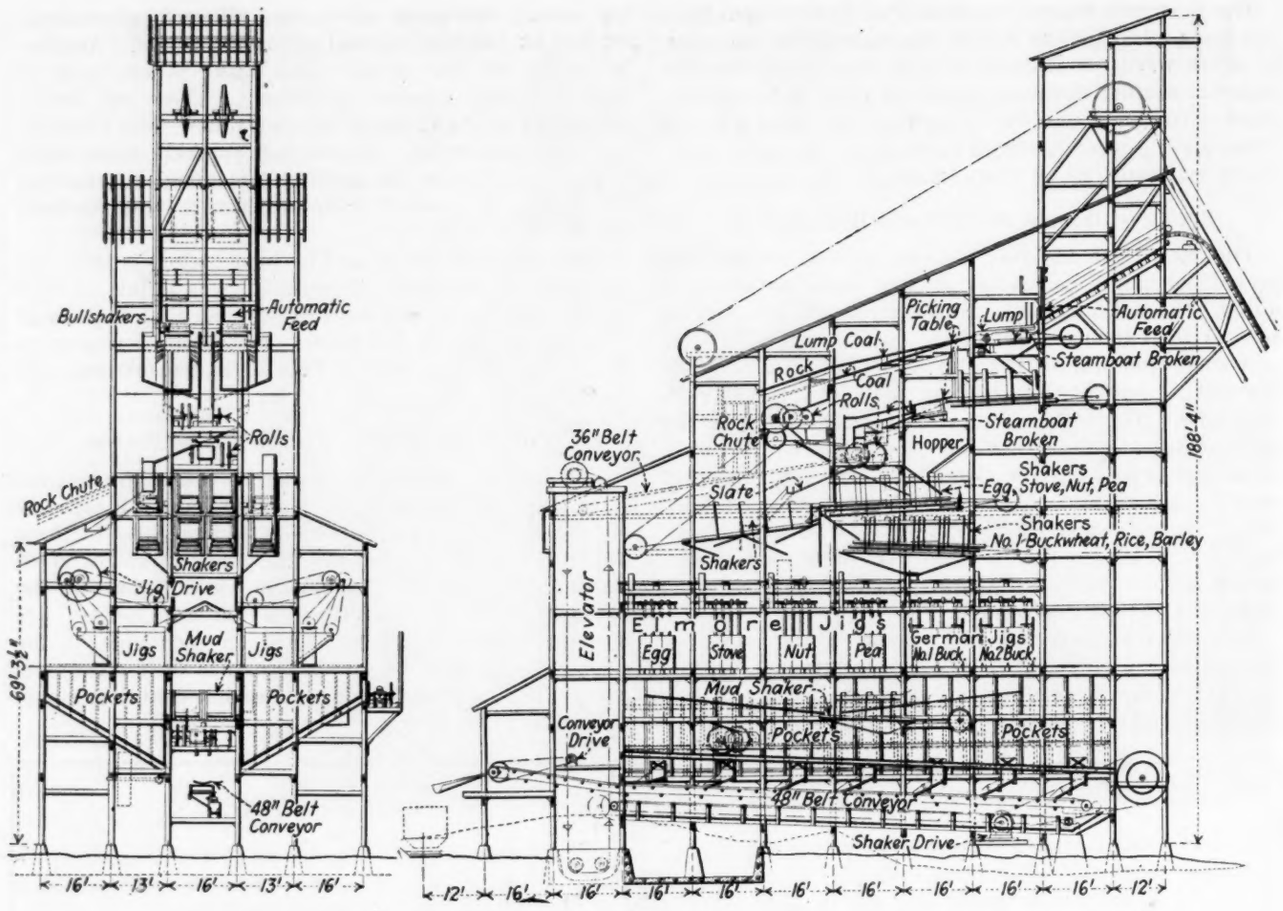
The control of the jig and breaker motors is from one switchboard in charge of one man, whose duty it is to attend this board and nothing else, so that in case of accident the whole machinery in the breaker can be stopped almost instantly. This arrangement tends toward safety.

Pumps for Fresh and for Slush Water

The pump room in this breaker is rather interesting. Here are installed six Aldrich pumps having a capacity of 1,500 gal. of water per minute each. Three of these are used for fresh water and the other three for slush water. The first group furnishes water for use in the breaker. Two 150-hp. General Electric motors are used to drive these pumps, one on each side of the room. Each motor drives three pumps from a countershaft. This is a somewhat peculiar but doubtless a convenient arrangement.



FLOW SHEET FOR THE BREAKER OF THE ALLIANCE COAL MINING CO. AT KASKA
The numbers on the various elements in the sheet are referred to in the article and thus the feeder can follow in detail the operation of the breaker.



CROSS-SECTION OF ALLIANCE BREAKER, SHOWING INTERESTING METHOD OF LOADING

A long 48-in. conveyor line receives the coal from the various pockets and deposits it in the waiting cars. Another conveyor takes care of the lip-screen rejects, and carries them to an elevator booth, whence they are lifted toward the top of the breaker, where they are further transferred and reach the shaker screens by a long 36-in. belt conveyor.

Coal Age hopes to print shortly a description of the town in which the plant above depicted is situated. This town is in process of remodeling and dwellings of an excellent type of construction that will compare favorably with residences in some of the most prosperous cities in the land are taking the places of the crude type of houses that formerly served to shelter mine workers and their families throughout the coal regions.

Alabama Governor Will Prohibit Interstate Sale of Coal Mined by Convicts

AN SEPT. 8 Governor Kilby, through the board of control, notified the four coal-mining corporations using convict labor at their mines that no part of the coal mined should be exported and that they should be ready to receive an order at any time forbidding interstate shipment. The convict-labor contracts are revocable at the will of the state authorities without notice.

Public institutions, schools and utilities have been unable to obtain adequate supplies for the ensuing winter, and the action is taken in their behalf. About 1,200 convicts are engaged in mining coal, their output running about 3,000 tons per day. The companies employing convicts are the Sloss-Sheffield Steel & Iron Co., operating the Banner mine; the Pratt Consolidated Coal Co., operating Flat Top; the Bessemer Coal, Iron & Land Co., operating Belle Ellen; and the Montevallo Mining Co., operating Aldrich. Banner and Flat Top produce daily about 1,000 tons each while the Belle Ellen has an output of 450 tons per day and the Aldrich puts out 500 tons a day.

Southern Illinois Now Willing to Work

ACCORDING to the best information obtainable all the mines in Franklin, Williamson and Saline counties, Illinois, have at last got all labor troubles adjusted, for the present at least, and the only thing now that is preventing full production is the continued short car supply. The Rendville mine of the W. P. Rend Collieries Co. was among the last in the Franklin field to adjust differences with the men, which arose over the price of powder. It is said that one mine in the Saline field where the drivers went out settled the trouble by the simple expedient of discharging sixteen drivers in a body and putting other men in their places.

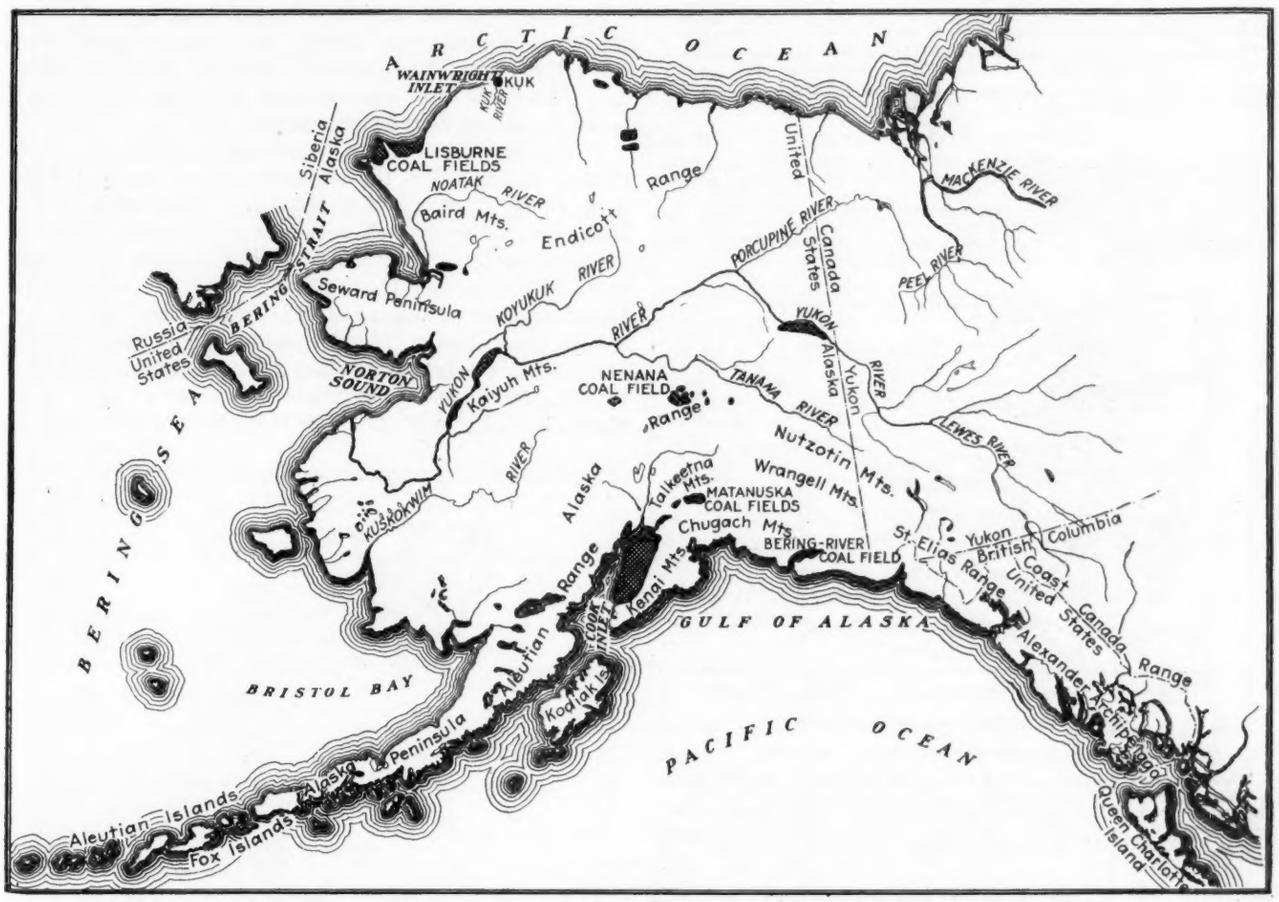
Washington Mine Workers Called Out by Ben Ferrimond, District President

MINE workers to the number of nearly 3,000 were ordered to strike on Sept. 23, by an order issued by Ben Ferrimond, president of District 10 of the United Mine Workers of America, which district comprises the State of Washington.

Temperatures at Which Ash from Western Coals Fuses to a Sphere*

Coals of the Western States Show a Wide Range, Varying All the Way from Anthracite to Lignite—The Low-Fusibility Temperature of Lignites Apparently Not Due to Presence of Pyrite, for Sulphur Content Is Low

BY W. A. SELVIG, L. R. LENHART AND A. C. FIELDNER
Washington, D. C.



ALASKA WITH MATANUSKA, BERING-RIVER, NENANA AND OTHER COAL FIELDS

Some of the larger areas, as that on the Kenai Peninsula, are relatively unimportant. Candle is situated on the north of the Seward Peninsula, on the inlet from Kotzebue Sound, just north of the "I" in Peninsula. Iditarod lies north of the Kuskokwim River not far from one of its headwaters. The relative importance of the Alaska fields is a matter for further determination and will depend not alone on quality, thickness or quantity, but on the nearness of markets, which markets are by no means definitely determined at present.

THIS is next to the last of a series of papers[1] covering "fusing" or "softening" temperatures of ash from American coals. The papers previously published gave a description of the standard gas-furnace method used by the Bureau of Mines in making ash-fusibility tests, a discussion of the relation of fusibility to clinker formation, and complete tables giving results obtained for Eastern and Mid-Continent coals.

In this paper and the one to follow are given the results obtained for Western coals, including those from Alaska, California, Colorado, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington and Wyoming.

In recent years there has been a growing demand for information concerning the fusibility of ash from various coals. This led the Bureau of Mines to make a general survey of ash fusibility of typical American solid fuels. This series of papers should be of considerable interest to all large consumers of coal, as they give the most complete information on the fusibility of ash from American coals that has ever been published.

All tests were made on standard mine samples collected by representatives of the Bureau of Mines or the U. S. Geological Survey, according to the standard

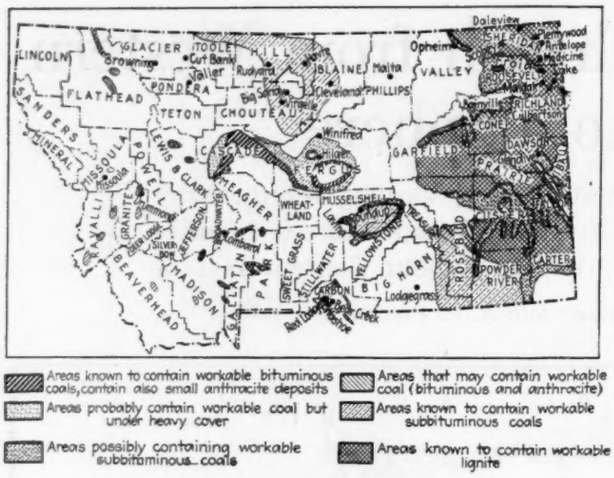
*Published by permission of the director U. S. Bureau of Mines.

[1]Selvig, W. A., "Fusibility of West Virginia Coal Ash," *Coal Age*, vol. 15, No. 1, 1919, pp. 12-16.

Selvig, W. A., and Fieldner, A. C., "Fusibility of Ash from Pennsylvania Coals," *Coal Age*, vol. 15, No. 24, 1919, pp. 1086-1089.

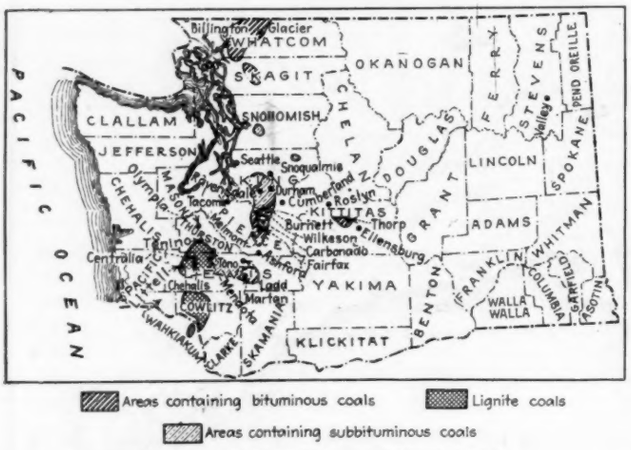
Selvig, W. A.; Ratliff, W. C., and Fieldner, A. C., "Fusibility of Ash from Coals Found in the Interior Province," *Coal Age*, vol. 15, No. 16, 1919, pp. 698-703.

Selvig, W. A., Brown, O. C., and Fieldner, A. C., "Fusibility of Coal Ash from Eastern Coals," Part I, *Coal Age*, vol. 17, No. 4, 1920, pp. 177-180. Part II, *Coal Age*, vol. 17, No. 5, 1920, pp. 225-230.



MONTANA COAL FIELD

Montana produced 4,532,505 tons during 1919. The principal fields are the Judith Basin field in the center of the state, principally in Fergus and Cascade counties; the Assinniboine field, Hill being one of the counties; the Missoula field, in the county by that name and adjacent counties; the Bull Mountain field, in Musselshell County; the Red Lodge field, in Carbon County, and the Trail Creek field, in Gallatin and Park counties.



WASHINGTON'S FOUR COAL AREAS

Washington's output in 1919 was 4,082,212 tons. In the north is the Northern Puget Sound field, in Whatcom and Skagit counties. Near the city of Seattle is the South Puget Sound field, in King and Pierce counties. Further south comes the Lewis County field and still further south that named after Cowlitz County.

methods which the Bureau has prescribed for this work.[2]

Because of the lack of correlation between the coal beds in most of the Western States, the arrangement in the table of the coals tested has been made according to state, county, town, mine and coal bed. The number of samples from each mine, the lowest, highest and average softening temperatures in deg. F., and the per cent of ash and sulphur in the dry coal are tabulated for each mine tested. As a great variety of coal is found in the West, ranging from lignite to anthracite, the rank of each coal tested is given.

In order to attain brevity this rank is abbreviated. Thus A. signifies anthracite; S.-A., semi-anthracite; S.-B., semi-bituminous; B., bituminous; Sb.-B., subbituminous; N.C., natural coke, and L., lignite.

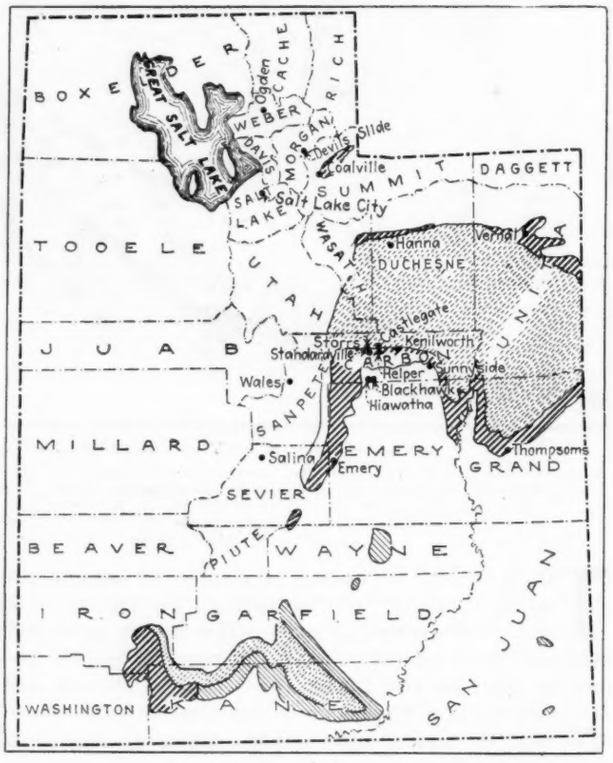
The point taken as the softening temperature, as shown in these tables, is that at which the ash when molded into solid triangular pyramids $\frac{3}{4}$ in. high, $\frac{1}{4}$ in. at the side of the base and mounted in a vertical position, will fuse down to a spherical or hemispherical lump. Samples remaining unfused at 3,010 deg. F., which was the highest temperature attained in the tests, were marked plus 3,010 (+3,010) and used as such in figuring the average values for the mine.

It has been found that the softening temperature of coal ash from the various fields of the United States range, in general, from 1,900 to 3,100 deg. F. This range of softening temperature for convenience in discussion is subdivided into the following groups: Class 1, refractory ashes, softening above 2,600 deg. F.; class 2, ashes of medium fusibility, softening between 2,200 and 2,600 deg. F.; and class 3, easily fusible ashes, softening below 2,200 deg. F.

From the tables it will be noted that almost all of the coals tested from Alaska gave ash ranging from refractory (class 1) to that of medium fusibility (class 2). Most of the Alaska coal samples listed were taken from outcrops or prospects.

The coals listed from Washington show all three classes of fusibility, the majority of the samples, however, came in class 1 and class 2. These coals have a high ash content, which is, however, in many instances quite refractory. Only a little coal occurs in Oregon and California and these states are of no commercial importance as producers of this fuel.

The coals tested from Colorado and New Mexico ranged from refractory (class 1) to easily fusible (class 3) ash, the majority of the samples tested coming in class 1 and class 2. The Colorado coals will be



UTAH HAS THREE COAL FIELDS

However, practically it has more, for the large field in the eastern part of the state is divided by an area having such heavy cover that it splits the field in two. This field covers parts of Emery, Carbon, Duquesne, Uinta and Sevier counties. Another field is the Coalville district, near Salt Lake City. The Kane County field, in the southern part of the state, is but little developed. In 1919 Utah produced 5,136,825 tons.

[2]Holmes, J. A., "The Sampling of Coal in the Mine," Technical Paper 1, Bureau of Mines, 1911, 18 pp.

Softening Temperatures of Coal Ash from Western Coals

ALASKA

Field or District	Location	Mine	Coal Bed	Type of Coal	No. of Samples	Softening Temperature, Deg. F. Lowest	Highest	Average	Average Analysis of Dry Coal. Percentage of Ash	Sulphur
Bering	Wardall Ridge	Outcrop	Unnamed	S.-B.	1	.....	.....	2,820	7.27	0.68
Bering	Wardall Ridge	Outcrop	Unnamed	S.-B.	1	.....	.....	2,410	1.27	0.70
Fairhaven	Candle	Kugruk	Unnamed	S.-B.	1	.....	.....	2,410	6.44	1.51
Iditarod	Iditarod	Prospect	Unnamed	A.	1	.....	.....	2,380	7.35	1.12
Iditarod	Tramway	Prospect	Unnamed	A.	1	.....	.....	2,710	5.27	0.80
Kenai Peninsula	Port Graham	Outcrop	Unnamed	Sb.-B.	1	.....	.....	2,490	15.80	1.06
Matanuska	Anthracite Ridge	Outcrop	Unnamed	S.-A.	1	.....	.....	2,250	26.23	0.20
Matanuska	Anthracite Ridge	Outcrop	Unnamed	B.	1	.....	.....	2,960	8.02	0.50
Matanuska	Boulder Creek	Outcrop	Unnamed	B.	1	.....	.....	2,910	9.14	0.45
Matanuska	Chickaloon	Chickaloon	No. 8	S.-B.	2	2,370	2,840	2,600	11.94	0.43
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel B	No. 5	B.	1	.....	.....	3,000	9.55	0.58
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel B	No. 5½	B.	1	.....	.....	2,040	8.14	0.62
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel B	No. 6	B.	1	.....	.....	2,270	3.07	0.69
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel B	No. 9	S.-B.	1	.....	.....	+3,000	20.54	0.55
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel D	D	S.-B.	1	.....	.....	2,980	12.23	0.54
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel D	E	S.-B.	1	.....	.....	2,250	11.13	1.51
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel 1	No. 8	S.-B.	2	2,420	2,890	2,650	10.19	0.64
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel 2	Upper No. 5	S.-B.	1	.....	.....	2,980	7.89	0.57
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel 3	No. 3	S.-B.	1	.....	.....	2,640	5.78	0.69
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel 3	No. 4	S.-B.	1	.....	.....	2,230	9.49	0.65
Matanuska	Chickaloon River	U.S.N.A.C.I.E., Tunnel 4	D	S.-B.	1	.....	.....	2,980	11.03	0.51
Matanuska	Coal Creek	Outcrop	C	B.	1	.....	.....	2,380	3.47	0.33
Matanuska	Coal Creek	Outcrop	No. 2	S.-B.	1	.....	.....	2,490	4.65	0.41
Matanuska	Coal Creek	Outcrop	No. 2	S.-B.	1	.....	.....	2,660	9.77	0.43
Matanuska	Coal Creek	Outcrop	No. 3	S.-B.	1	.....	.....	2,890	10.31	0.36
Matanuska	Coal Creek	Outcrop	No. 3	B.	1	.....	.....	2,510	5.93	0.40
Matanuska	Coal Creek	Outcrop	No. 4	S.-B.	1	.....	.....	2,270	6.82	0.52
Matanuska	Coal Creek	Outcrop	No. 5	S.-B.	1	.....	.....	3,000	9.88	0.40
Matanuska	Coal Creek	Outcrop	No. 6	S.-B.	1	.....	.....	3,000	11.94	0.45
Matanuska	Coal Creek	Outcrop	No. 6	S.-B.	1	.....	.....	2,980	9.65	0.46
Matanuska	Coal Creek	U.S.N.A.C.I.E., Tunnel A	No. 8	S.-B.	3	2,290	2,520	2,390	5.62	0.47
Matanuska	Coal Creek	U.S.N.A.C.I.E., Drift 1	No. 1	S.-B.	1	.....	.....	2,950	9.21	0.52
Matanuska	Coal Creek	U.S.N.A.C.I.E., Drift 2	No. 4	B.	1	.....	.....	2,820	13.44	0.62
Matanuska	Emery	Kelly	Kelly	B.	2	2,210	2,660	2,440	8.27	0.50
Matanuska	Eska	David	David	B.	1	.....	.....	2,280	5.79	0.55
Matanuska	Eska	Emery	Emery	B.	1	.....	.....	2,740	10.26	0.35
Matanuska	Eska	Eska	Eska	B.	1	.....	.....	2,690	18.39	0.39
Matanuska	Eska	Maitland	Maitland	B.	1	.....	.....	2,150	7.62	0.46
Matanuska	Eska	McCauley Prospect	McCaluey	B.	1	.....	.....	+3,010	9.96	0.57
Matanuska	Kings River	Outcrop	No. 1	B.	1	.....	.....	2,570	11.18	0.51
Matanuska	Kings River	Outcrop	No. 1	B.	1	.....	.....	2,310	8.73	0.58
Matanuska	Kings River	Outcrop	No. 1	N. C.	1	.....	.....	2,610	12.76	0.20
Matanuska	Kings River	Outcrop	No. 2	B.	1	.....	.....	2,620	16.47	0.54
Matanuska	Matanuska River	Outcrop	Unnamed	B.	1	.....	.....	2,680	20.72	0.31
Matanuska	Moose Creek	Outcrop	Unnamed	B.	1	.....	.....	2,300	9.37	0.36
Matanuska	Young Creek	Outcrop	Unnamed	B.	1	.....	.....	2,450	5.66	0.26
Nenana	California Creek	Outcrop	Unnamed	L.	1	.....	.....	2,350	25.56	0.58
Nenana	California Creek	Outcrop	Unnamed	L.	2	2,350	2,390	2,370	34.71	0.27
Nenana	Fault Gulch	Outcrop	Unnamed	L.	1	.....	.....	2,450	7.18	0.22
Nenana	Healy Creek	Outcrop	Unnamed	L.	1	.....	.....	2,450	6.10	0.22
Nenana	Healy Creek	Outcrop	Unnamed	L.	1	.....	.....	2,400	7.53	0.32
Nenana	Igloo Creek	Outcrop	Unnamed	L.	2	2,500	2,540	2,520	4.78	0.14
Nenana	Lignite Creek	Outcrop	B	L.	1	.....	.....	2,340	13.30	0.24
Nenana	Lignite Creek	Outcrop	No. 5	L.	1	.....	.....	2,150	9.93	0.21
Nenana	Lignite Creek	Outcrop	Unnamed	L.	1	.....	.....	2,370	16.42	0.26
Nenana	Lignite Creek	Outcrop	Unnamed	L.	1	.....	.....	2,450	5.52	0.18
Nenana	Lignite Creek	Outcrop	Unnamed	L.	1	.....	.....	2,210	11.07	0.25
Nenana	Lignite Creek	Outcrop	Unnamed	L.	1	.....	.....	2,390	8.01	0.35
Nenana	Lignite Creek	Outcrop	Unnamed	L.	1	.....	.....	2,300	15.43	0.54
Nenana	Nenana River	Outcrop	Unnamed	L.	1	.....	.....	2,370	5.07	0.21
Nenana	Tatlanika River	Outcrop	Unnamed	L.	1	.....	.....	2,670	22.55	0.32
Yakataga	Duktoth Valley	Outcrop	Unnamed	S.-B.	1	.....	.....	+3,000	23.69	0.67

CALIFORNIA

County	Town	Mine	Coal Bed							
Mendocino	Dos Rios	Outcrop	Unnamed	.....	1	.....	.....	2,220	6.91	2.98
Monterey	Stone Cañon	Stone Cañon		B.	2	2,210	2,470	2,340	11.26	4.62

IDAHO

Boise	Horse Shoe Bend	Henry	Unnamed	Sb.-B.	2	2,480	2,810	2,640	30.90	0.49
Cassia	Oakley	Worthington	Worthington	L.	1	.....	.....	2,130	27.54	0.96
Fremont	Driggs	Bellent	Unnamed	B.	1	.....	.....	1,950	4.91	0.58
Fremont	Haden	Brown Bear	Unnamed	B.	1	.....	.....	2,090	4.86	0.61
Fremont	Haden	Horseshoe	Unnamed	B.	1	.....	.....	2,010	2.36	0.41
Fremont	Monida	Scott-Buey	Unnamed	Sb.-B.	1	.....	.....	2,270	12.80	0.87
Teton	Victor	Pine Creek Pass	Unnamed	Sb.-B.	1	.....	.....	2,160	38.40	1.41

MONTANA

Big Horn	Lodgegrass	Local Prospect	Carney	Sb.B.	1	.....	.....	2,180	6.52	0.39
Big Horn	Sanders	Prospect	"M"	Sb.B.	1	.....	.....	2,250	7.75	0.66
Blaine	Cleveland	Cook	Unnamed	Sb.-B.	1	.....	.....	2,240	11.51	0.90
Broadwater	Lombard	Western	Unnamed	B.	2	2,350	2,470	2,410	24.38	8.22
Carbon	Bear Creek	International	No. 3	Sb.-B.	3	2,010	2,090	2,040	9.44	1.99
Carbon	Bear Creek	No. 2	No. 2	Sb.-B.	5	2,050	2,100	2,080	10.46	1.79
Carbon	Bear Creek	North Side	No. 3	Sb.-B.	1	.....	.....	1,930	9.87	1.73
Carbon	Bear Creek	South Side	No. 3	Sb.-B.	3	2,040	2,110	2,080	12.50	2.47
Carbon	Red Lodge	Red Lodge No. 4	No. 4	Sb.-B.	4	2,120	2,170	2,150	13.20	1.13
Carbon	Washoe	Washoe	No. 3	Sb.-B.	4	2,090	2,190	2,150	12.57	1.25
Chouteau	Big Sandy	Mackton	Mackton	Sb.-B.	2	2,230	2,230	2,230	14.62	0.70
Choteau	Virgelle	Deda	Unnamed	Sb.-B.	1	.....	.....	2,290	13.84	0.99
Choteau	Virgelle	Price Sexton	Unnamed	Sb.-B.	1	.....	.....	2,200	13.54	0.74
Custer	Westmore	Prospect	Unnamed	L.	1	.....	.....	2,170	15.02	0.49
Custer	Terry	Cameron	Unnamed	L.	1	.....	.....	2,460	22.15	0.38
Dawson	Glendive	Prospect	"B"	L.	1	.....	.....	2,420	9.24	0.95
Dawson	Glendiv	Snyder	Unnamed	L.	1	.....	.....	2,030	11,92	2.00
Dawson	Jordan	Foster Prospect	Unnamed	Sb.-B.	1	.....	.....	2,240	16.17	0.63
Fallon	Camp Crook	Horner	Kerr	L.	1	.....	.....	2,180	12.25	1.06
Fallon	Camp Crook	Kerr	Kerr	L.	1	.....	.....	2,000	23.73	2.62
Fergus	Hilger	Stone	Unnamed	Sb.-B.	1	.....	.....	2,220	16.66	1.40
Fergus	Winifred	Calderwood	Unnamed	Sb.-B.	1	.....	.....	2,270	15.25	1.06

Softening Temperatures of Coal Ash from Western Coals—Continued

MONTANA—Continued

County	Town	Mine	Coal Bed	Type of Coal	No. of Samples	Softening Temperature Deg. F. Lowest	Highest	Average	Average Analysis of Dry Coal. Percentage of Ash	Sulphur
Fergus	Winifred	Millsop	Unnamed	B.	1	.....	.....	2,750	20.15	1.10
Fergus	Winifred	Prospect	Unnamed	Sb.-B.	1	.....	.....	2,530	12.58	0.70
Fergus	Winifred	Prospect	Unnamed	Sb.-B.	1	.....	.....	2,200	19.48	0.88
Fergus	Winifred	Prospect	Unnamed	Sb.-B.	1	.....	.....	2,240	19.33	2.47
Fergus	Winifred	Prospect	Unnamed	Sb.-B.	1	.....	.....	2,360	18.83	0.69
Fergus	Winifred	Prospect	Unnamed	Sb.-B.	1	.....	.....	2,150	12.58	0.87
Fergus	Winifred	Prospect	Unnamed	Sb.-B.	1	.....	.....	2,170	14.91	1.61
Fergus	Winifred	Prospect	Unnamed	B.	1	.....	.....	2,370	18.09	0.80
Flathead	Flathead River	Outcrop	Unnamed	Sb.-B.	1	.....	.....	2,210	11.41	2.92
Granite	Drummond	Prospect	Unnamed	Sb.-B.	1	.....	.....	2,370	20.99	1.70
Hill	Havre	Prospect	Unnamed	Sb.-B.	1	.....	.....	2,250	22.68	0.92
Hill	Havre	Prospect	Unnamed	Sb.-B.	1	.....	.....	2,010	9.46	1.03
Hill	Havre	Prospect	Unnamed	Sb.-B.	1	.....	.....	2,060	14.25	0.79
Hill	Havre	Prospect	Unnamed	Sb.-B.	1	.....	.....	2,220	26.72	1.64
Hill	Havre	Wheatman	Unnamed	Sb.-B.	1	.....	.....	2,130	20.15	1.00
Hill	Rudyard	Banks & Severn	"No. 1"	Sb.-B.	1	.....	.....	2,020	12.23	1.52
Hill	Rudyard	Outcrop	"No. 1"	Sb.-B.	1	.....	.....	2,060	20.95	1.97
Hill	Shelby	West Butte	Unnamed	B.	1	.....	.....	2,320	8.97	1.91
Missoula	Missoula	Hell Gate	Unnamed	Sb.-B.	2	2,230	2,260	2,240	26.28	1.08
Musselshell	Lavina	Bennett	Unnamed	Sb.-B.	1	.....	.....	2,220	16.79	1.97
Musselshell	Lavina	Caldwell	Unnamed	Sb.-B.	1	.....	.....	2,910	17.91	1.92
Musselshell	Paited Rock	Shol's	Unnamed	Sb.-B.	1	.....	.....	2,310	18.37	1.13
Musselshell	Roundup	Davis No. 4	Roundup	Sb.-B.	1	.....	.....	2,290	7.60	0.53
Musselshell	Roundup	Keene	Roundup	Sb.-B.	1	.....	.....	2,420	8.99	0.59
Musselshell	Roundup	Republic No. 2	Roundup	Sb.-B.	1	.....	.....	2,290	7.60	0.45
Musselshell	Roundup	Roundup A	Roundup	Sb.-B.	4	2,070	2,310	2,230	9.17	0.88
Musselshell	Roundup	Roundup No. 3	Roundup	Sb.-B.	1	.....	.....	2,290	8.15	0.67
Phillips	Malta	Spencer	Unnamed	L.	1	.....	.....	2,450	34.75	0.78
Rosebud	Bighorn	Prospect	Unnamed	Sb.-B.	1	.....	.....	2,240	17.89	1.87
Sheridan	Daleview	Ranous	Daleview	L.	1	.....	.....	2,120	15.61	0.38
Sheridan	East Scobey	Coal Creek	Coal Creek	L.	1	.....	.....	2,240	15.74	0.90
Sheridan	Plentywood	Pierce	Richardson	L.	1	.....	.....	2,340	11.47	0.72
Teton	Browning	Stone Prospect	Unnamed	B.	1	.....	.....	2,790	13.53	1.09
Teton	Cut Bank	Allison Prospect	Unnamed	B.	1	.....	.....	2,590	30.08	1.93
Teton	Cut Bank	Prospect	Unnamed	B.	1	.....	.....	2,230	21.54	0.71
Teton	Valier	Blair	Unnamed	B.	1	.....	.....	2,140	14.87	3.30
Valley	Antelope	Richardson	Richardson	L.	1	.....	.....	2,120	10.43	0.44
Valley	Bainville	Red Bank	"G"	L.	1	.....	.....	2,470	8.11	0.42
Valley	Culbertson	Bruegger	"E"	L.	1	.....	.....	2,170	13.50	1.90
Valley	Culbertson	Butterfield	"DD"	L.	1	.....	.....	2,290	9.70	0.51
Valley	Culbertson	Depmsey	"E"	L.	1	.....	.....	2,350	10.19	1.23
Valley	Culbertson	Prospect	F	L.	1	.....	.....	2,350	11.95	1.75
Valley	East Scobey	Fisher	Unnamed	L.	1	.....	.....	2,210	14.86	0.49
Valley	Froid	Astrope	"F"	L.	1	.....	.....	2,220	10.51	1.22
Valley	Froid	Prospect	"F"	L.	1	.....	.....	2,280	8.85	1.20
Valley	Medicine Lake	Belgon	Unnamed	L.	1	.....	.....	2,390	8.23	0.61
Valley	Medicine Lake	Coal Ridge	Coal Ridge	L.	1	.....	.....	2,250	12.60	0.65
Valley	Medicine Lake	Jones	Jones	L.	1	.....	.....	2,390	9.54	0.69
Valley	Medicine Lake	Young	Young	L.	1	.....	.....	2,360	9.46	0.87
Valley	Mondak	Open Pit	"G"	L.	1	.....	.....	2,230	6.99	0.63
Valley	Opheim	Baldwin Bros	Opheim	L.	1	.....	.....	2,080	15.21	0.96
Valley	Opehim	Dawson	Unnamed	L.	1	.....	.....	2,150	13.11	0.54
Valley	Plentywood	Pierce	Richardson	L.	1	.....	.....	2,340	12.31	1.00

NEVADA

Esmeralda	Coaldale	Darms	"C"	B.	1	.....	.....	2,480	31.16	7.33
Esmeralda	Coaldale	Nevada	"C"	B.	2	2,200	2,570	2,380	23.88	7.14
Mineral	Yerington	Prospect	Unnamed	Sb.-B.	1	.....	.....	2,190	38.31	4.21

NEW MEXICO

Bernalillo	Albuquerque	Holmes	Unnamed	B.	1	.....	.....	2,330	31.65	3.29
Colfax	Brilliant	Brilliant	Tin Pan	B.	1	.....	.....	2,870	16.51	0.57
Colfax	Dawson	Dawson No. 2	Raton	B.	7	2,530	2,910	2,800	13.67	0.72
Colfax	Dawson	Dawson No. 6	Dawson	B.	1	.....	.....	2,850	14.95	0.58
Colfax	Gardiner	Gardiner No. 1	Raton	B.	1	.....	.....	3,000	15.60	0.66
Colfax	Koehler	Koehler	Raton	B.	1	.....	.....	2,940	11.16	0.73
Colfax	Koehler	Koehler No. 1	Raton	B.	4	2,710	+3,000	+2,880	12.45	0.65
Colfax	Koehler	Koehler No. 2	Raton	B.	1	.....	.....	3,040	11.77	0.72
Colfax	Sugarite	Sugarite No. 1	Sugarite	B.	1	.....	.....	2,740	9.29	0.58
Colfax	Sugarite	Sugarite No. 2	Sugarite	B.	1	.....	.....	2,660	8.96	0.53
Colfax	Van Houten	Van Houten No. 1	Raton	B.	1	.....	.....	3,000	11.27	0.85
Colfax	Van Houten	Van Houten No. 4	Raton	B.	1	.....	.....	+3,000	12.18	0.58
Colfax	Yankee	Yankee	Yankee	B.	1	.....	.....	2,460	13.02	1.16
Colfax	Yankee	Yankee No. 3	Yankee	B.	2	2,800	2,850	2,820	13.89	0.58
Lincoln	White Oaks	Old Abe	Ole Abe	B.	1	.....	.....	2,380	15.07	0.85
Lincoln	White Oaks	Wild Cat	Unnamed	B.	1	.....	.....	2,730	17.30	0.78
McKinley	Allison	Coal Basin	Coal Basin No. 1	Sb.-B.	2	2,000	2,180	2,090	7.19	0.54
McKinley	Allison	Diamond	Aztec (?)	Sb.-B.	3	2,150	2,440	2,270	9.68	0.55
McKinley	Allison	Diamond	Diamond No. 1	Sb.-B.	1	.....	.....	2,210	7.75	0.53
McKinley	Allison	Diamond	Diamond No. 2	Sb.-B.	1	.....	.....	2,380	9.97	0.52
McKinley	Blackrock	Zuni Indian School	Unnamed	Sb.-B.	1	.....	.....	2,890	10.34	0.93
McKinley	Gallup	Bartlett	Black Diamond (?)	Sb.-B.	1	.....	.....	2,950	11.79	0.74
McKinley	Gallup	Beddow	Aztec (?)	Sb.-B.	1	.....	.....	2,120	5.86	0.73
McKinley	Gallup	Carreto ( )	Otero (?)	Sb.-B.	1	.....	.....	2,540	4.92	0.66
McKinley	Gallup	Defiance	Defiance	Sb.-B.	1	.....	.....	2,460	7.93	0.88
McKinley	Gallup	Gallup Southwestern	Black Diamond	Sb.-B.	1	.....	.....	2,490	7.35	0.85
McKinley	Gallup	Heaton	No. 2	Sb.-B.	1	.....	.....	2,370	6.68	0.70
McKinley	Gallup	Heaton	No. 3½	Sb.-B.	1	.....	.....	2,070	3.93	0.62
McKinley	Gallup	Jones	Defiance	Sb.-B.	1	.....	.....	2,400	6.04	1.09
McKinley	Gallup	Myers	Myers	Sb.-B.	1	.....	.....	2,490	8.56	0.82
McKinley	Gallup	Navajo	No. 1	Sb.-B.	1	.....	.....	2,670	10.49	0.49
McKinley	Gallup	Navajo	No. 2	Sb.-B.	1	.....	.....	2,150	4.65	0.67
McKinley	Gallup	Navajo	No. 5	Sb.-B.	2	2,350	2,610	2,480	8.30	0.54
McKinley	Gibson	Navajo No. 1	No. 5	Sb.-B.	1	.....	.....	2,350	7.58	0.65
McKinley	Gibson	Navajo No. 2	No. 5	Sb.-B.	4	2,600	2,700	2,650	9.02	0.54
McKinley	Gibson	Weaver	No. 2	Sb.-B.	1	.....	.....	2,060	5.64	0.57
McKinley	Gibson	Weaver	No. 3	Sb.-B.	2	1,950	2,060	2,000	3.92	0.58
McKinley	Gibson	Weaver	No. 3½	Sb.-B.	1	.....	.....	2,170	7.21	0.42
McKinley	Gibson	Weaver	No. 5	Sb.-B.	2	2,340	2,720	2,530	8.43	0.64
McKinley	Heaton	Heaton	No. 2	Sb.-B.	1	.....	.....	2,150	5.31	0.48
Rio Arriba	Lumberton	Prospect	Unnamed	B	1	.....	.....	2,420	10.77	2.28
Rio Arriba	Monero	Old Simus	Upper	B	1	.....	.....	2,340	5.68	0.70
San Juan	Durango	Colarado-New Mexico	"A"	B	1	.....	.....	2,550	14.05	0.71
San Juan	Farmington	Bill Thomas	Carbonero	B	1	.....	.....	2,940	11.68	0.67
San Juan	Farmington	Blake	Unnamed	Sb.-B.	1	.....	.....	2,220	6.68	1.14
San Juan	Farmington	Government	Hogback	B.	1	.....	.....	2,230	3.46	0.72
San Juan	Farmington	Jones	Carbonero	B.	1	.....	.....	2,870	12.80	1.42
San Juan	Farmington	Local	Unnamed	Sb.-B.	1	.....	.....	2,860	8.34	0.82
San Juan	Farmington	Marcelius	Carbonero	Sb.-B.	1	.....	.....	2,850	9.13	0.68
San Juan	Farmington	Prospect	Carbonero	Sb.-B.	1	.....	.....	2,150	14.02	2.61
San Juan	Farmington	Prospect	Carbonero	Sb.-B.	1	.....	.....	2,290	7.68	0.53
San Juan	Farmington	Ship Rock Indian School	Unnamed	Sb.-B	1	.....	.....	2,270	4.64	0.95
San Juan	Fruitland	Black Diamond	Carbonero	Sb.-B.	1	.....	.....	2,340	11.19	0.68
San Juan	Fruitland	Hendrickson	Carbonero	Sb.-B.	1	.....	.....	2,720	10.33	0.67
San Juan	Pueblo Bonita	Pueblo Bonita	Unnamed	Sb.-B.	1	.....	.....	2,650	8.78	1.80
Santa Fe	Madrid	Anthracite No. 4	White Ash	A	1	.....	.....	2,210	10.08	0.82

Softening Temperatures of Coal Ash from Western Coals—Continued

NEW MEXICO—Continued

County	Town	Mine	Coal Bed	Type of Coal	No. of Samples	Softening Temperature, Deg. F. Lowest	Highest	Average	Average Analysis of Dry Coal. Percentage of Ash	Sulphur
Santa Fe	Madrid	Blacksmith	Peacock (?)	B	1	.....	.....	2,500	7.97	1.33
Santa Fe	Madrid	Peacock Prospect	Peacock	B	1	.....	.....	2,130	11.37	1.64
Socorro	Carthage	Government	Carthage	B	2	2,760	2,960	2,860	14.35	0.85
Socorro	Magdalena	Prospect	Unnamed	Sb.-B.	1	.....	.....	2,250	12.24	0.53
Socorro	Magdalena	Prospect	Unnamed	Sb.-B.	1	.....	.....	2,680	13.26	0.53
Socorro	Magdalena	Prospect	Unnamed	B.	1	.....	.....	2,220	7.58	0.53

OREGON

Clackamas	Wilhoit	Prospect	Unnamed	B.	1	.....	.....	2,890	22.04	0.53
Coos	Beaver Hill	Beaver Hill	Newport	Sb.-B.	1	.....	.....	2,060	11.59	0.94
Coos	Henryville	Henryville	Newport	Sb.-B.	1	.....	.....	2,060	9.79	0.86
Coos	West Fork	Cabin Prospect	Unnamed	B.	1	.....	.....	2,780	16.86	1.46
Coos	West Fork	Donnell Prospect	Unnamed	B.	1	.....	.....	2,790	29.71	1.14
Coos	West Fork	Everett Ass'n Prospect	Meyer	B.	1	.....	.....	2,500	23.93	1.52
Coos	West Fork	Hillis Prospect	Anderson	B.	1	.....	.....	2,280	16.92	0.70
Coos	West Fork	Meyers Prospect	Meyers	B.	1	.....	.....	2,490	26.69	1.85
Coos	West Fork	Pulford Prospect	Anderson	B	2	2,480	2,690	2,580	32.26	0.93
Coos	West Fork	Reeves Prospect	Carter	B.	1	.....	.....	2,690	40.70	0.62
Grant	Dayville	Old Prospect	Unnamed	L.	1	.....	.....	2,250	47.65	2.16
Malheur	Nyssa	Honolulu Prospect	Unnamed	L.	1	.....	.....	2,420	45.63	3.82
Wheeler	Fossil	Dry Hollow Prospect	Unnamed	Sb.-B.	2	2,480	2,670	2,580	37.60	0.54

UTAH

Carbon	Carbon	Panther	Castlegate	B.	1	.....	.....	2,110	5.59	0.60
Carbon	Castlegate	Cameron No. 1	No. 1	B.	1	.....	.....	2,230	6.40	0.41
Carbon	Castlegate	Cameron No. 2	No. 2	B.	1	.....	.....	2,170	6.78	0.48
Carbon	Castlegate	Castlegate No. 1	"A"	B.	1	.....	.....	2,100	6.46	0.51
Carbon	Castlegate	Castlegate No. 1	"C"	B.	1	.....	.....	2,080	5.02	0.49
Carbon	Castlegate	Castlegate No. 1	"D"	B.	1	.....	.....	2,130	7.37	0.63
Carbon	Castlegate	Castlegate No. 2	"B"	B.	1	.....	.....	2,210	9.44	0.68
Carbon	Castlegate	Castlegate No. 2	"D"	B.	1	.....	.....	2,150	5.51	0.34
Carbon	Helper	Prospect	Spring Canyon No. 1	B.	1	.....	.....	2,360	7.85	0.80
Carbon	Helper	Prospect	Spring Canyon No. 1	B.	1	.....	.....	2,260	9.09	0.72
Carbon	Hiawatha	Hiawatha No. 1	Hiawatha	B.	2	2,140	2,430	2,280	6.16	0.74
Carbon	Hiawatha	Hiawatha No. 2	Hiawatha	B.	2	2,220	2,220	2,220	7.50	0.58
Carbon	Kenilworth	Aberdeen	Book Cliffs ( )	B.	2	2,150	2,150	2,150	4.64	0.35
Carbon	Kenilworth	Aberdeen Prospect	Aberdeen	B.	1	.....	.....	2,130	6.68	0.43
Carbon	Kenilworth	Kenilworth	Aberdeen	B.	2	2,120	2,150	2,140	5.65	0.46
Carbon	Kenilworth	Kenilworth	Kenilworth	B.	2	2,130	2,150	2,140	5.52	0.50
Carbon	Kenilworth	Kenilworth	Royal Blue	B.	2	2,150	2,160	2,160	4.90	0.70
Carbon	Kenilworth	Milburn Prospect	Kenilworth	B.	1	.....	.....	2,130	5.86	0.56
Carbon	Kenilworth	Royal Blue	Unnamed	B.	1	.....	.....	2,150	4.57	0.65
Carbon	Price	Jesse Knight Prospect	Unnamed	B.	1	.....	.....	2,220	5.06	0.61
Carbon	Standardsville	Standard	Castlegate	B.	2	2,150	2,150	2,150	6.26	0.40
Carbon	Storrs	Spring Canyon No. 1	Spring Canyon No. 1	B.	1	.....	.....	2,150	8.82	0.58
Carbon	Storrs	Spring Canyon No. 2	Spring Canyon No. 2	B.	1	.....	.....	2,110	5.25	0.90
Carbon	Storrs	Spring Canyon No. 3	Spring Canyon No. 3	B.	1	.....	.....	2,190	8.57	0.41
Carbon	Sunnyside	Prospect	Unnamed	B.	1	.....	.....	2,620	5.58	1.11
Carbon	Sunnyside	Prospect	Unnamed	B.	1	.....	.....	2,210	4.20	0.52
Carbon	Sunnyside	Utah No. 1	Lower	B.	1	.....	.....	2,390	7.01	1.84
Carbon	Sunnyside	Utah No. 3	Lower	B.	2	2,550	2,980	2,760	8.04	1.32
Carbon	Sunnyside	Utah No. 3	Upper	B.	3	2,620	+3,010	+2,880	7.69	0.67
Emery	Black Haw	Black Hawk	Hiawatha	B.	6	20,40	2,430	2,130	6.34	0.78
Emery	Emery	Browning	"I"	B.	1	.....	.....	2,100	6.17	0.41
Emery	Emery	Casper	"C"	B.	1	.....	.....	2,430	14.90	0.85
Emery	Emery	Surface Prospect	"I"	B.	1	.....	.....	2,100	8.52	1.34
Emery	Emery	Williams	"I"	B.	1	.....	.....	2,000	12.10	4.85
Grand	Thompson	No. 1-A	"B"	B.	1	.....	.....	2,960	11.24	0.71
Grand	Thompson	Prospect	"A"	B.	1	.....	.....	2,670	11.28	0.65
Morgan	Devils Slide	Hever Robinson	Unnamed	Sb.-B.	1	.....	.....	2,500	23.47	0.77
Morgan	Devils Slide	Lucas & Smith	Unnamed	Sb.-B.	1	.....	.....	2,560	21.59	0.56
Sanpete	Wales	Coal Creek	Unnamed	B.	1	.....	.....	2,040	23.36	7.05
Sanpete	Wales	North Tunnel	Unnamed	B.	1	.....	.....	2,210	19.66	3.80
Sanpete	Wales	Thomas	Unnamed	B.	1	.....	.....	2,130	16.17	4.76
Sevier	Emery	Surface Prospect	"A"	B.	1	.....	.....	2,470	6.83	0.50
Sevier	Fremont	Hogan Prospect	"A"	B.	1	.....	.....	2,390	13.83	3.77
Sevier	Salina	Kearns & Duggins	Duggins	B.	1	.....	.....	2,320	13.07	0.47
Summit	Carter	Prospect	Unnamed	B.	1	.....	.....	2,710	15.86	0.57
Summit	Carter	Prospect	Unnamed	B.	1	.....	.....	2,150	10.55	5.28
Summit	Coalville	Ress-Grass Creek	Wasatch	Sb.-B.	1	.....	.....	2,420	3.86	2.16
Summit	Coalville	Superior	Wasatch	Sb.-B.	1	.....	.....	2,130	5.72	1.85
Summit	Coalville	Wasatch	Wasatch	Sb.-B.	1	.....	.....	2,350	4.72	1.59
Uinta	Vernal	Blue Bell	Unnamed	B.	1	.....	.....	2,520	13.56	1.65
Uinta	Vernal	Green	Unnamed	B.	1	.....	.....	2,370	9.03	2.59
Uinta	Vernal	Reynolds	Mancos	B.	1	.....	.....	2,740	7.56	1.07
Wasatch	Hanna	Prospect	Unnamed	Sb.-B.	1	.....	.....	2,130	6.95	0.96
Wasatch	Hanna	Winchester Prospect	Mancos	L.	1	.....	.....	2,040	3.57	0.83
Wasatch	Heber	Cummings	Unnamed	Sb.-B.	1	.....	.....	2,040	7.68	0.85

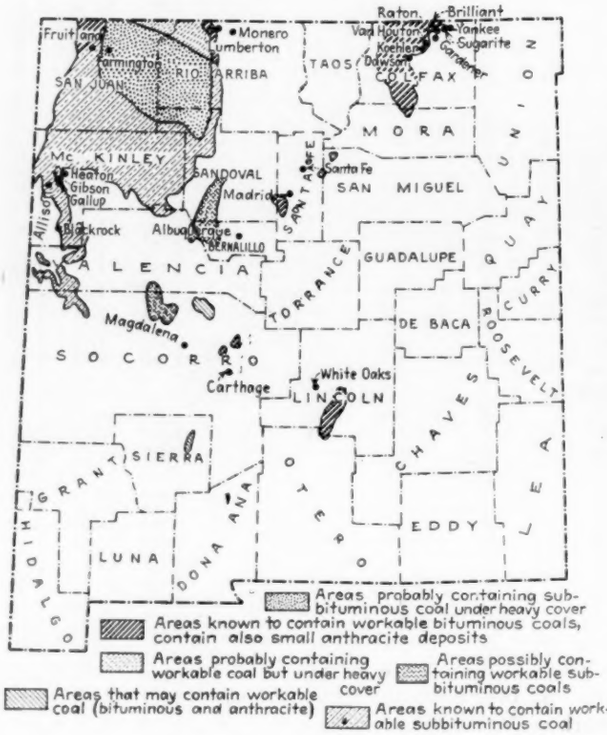
WASHINGTON

Clallam	Clallam	Fuca	Unnamed	B.	1	.....	.....	1,870	14.16	5.75
King	Cumberland	Rose-Marshall	Unnamed	B.	1	.....	.....	2,960	17.24	0.63
King	Durham	Prospect	No. 1	B.	1	.....	.....	3,000	17.51	0.54
King	Durham	Prospect	No. 2	B.	1	.....	.....	2,730	21.42	0.58
King	Grand Ridge	Grand Ridge	No. 3	Sb.-B.	1	.....	.....	2,610	11.38	0.58
King	Grand Ridge	Grand Ridge	No. 4	Sb.-B.	1	.....	.....	2,400	24.44	2.69
King	Grand Ridge	Grand Ridge	No. 7	Sb.-B.	1	.....	.....	2,640	15.01	0.45
King	Ravensdale	Ravensdale No. 1	No. 3	B.	1	.....	.....	2,380	6.91	0.37
King	Snoqualmie	Niblock	No. 3	B.	1	.....	.....	2,950	11.65	0.51
King	Snoqualmie	Niblock	No. 4	B.	1	.....	.....	2,930	13.21	0.94
King	Snoqualmie	Niblock	No. 5	B.	1	.....	.....	2,910	25.58	1.56
Kittitas	Ellensburg	Prospect	No. 7	B.	1	.....	.....	2,760	25.47	1.26
Kittitas	Ellensburg	Prospect	No. 9 C	B.	1	.....	.....	2,250	7.73	0.69
Kittitas	Ellensburg	Prospect	No. 10 d	B.	1	.....	.....	2,380	23.83	1.20
Kittitas	Ellensburg	Prospect	Unnamed	B.	1	.....	.....	2,580	17.73	1.59
Kittitas	Roslyn	Roslyn No. 1	Roslyn	B.	3	2,350	2,590	2,440	12.99	0.40
Kittitas	Roslyn	Roslyn No. 2	Roslyn	B.	1	.....	.....	2,320	11.94	0.49
Kittitas	Thorp	Wilson	Unnamed	B.	1	.....	.....	2,250	17.52	0.47
Lewis	Centralia	Fords Prairie	Unnamed	Sb.-B.	1	.....	.....	2,200	11.14	0.87
Lewis	Centralia	Monarch	Unnamed	Sb.-B.	1	.....	.....	1,990	12.16	1.37
Lewis	Chehalis	Chehalis	Unnamed	Sb.-B.	1	.....	.....	2,290	10.83	2.50
Lewis	Chehalis	Sheldon	Unnamed	Sb.-B.	2	2,340	2,380	2,360	8.30	0.75
Lewis	Chehalis	Superior	Superior No. 2	Sb.-B.	1	.....	.....	2,150	12.18	1.08
Lewis	Chehalis	Superior No. 1	Unnamed	Sb.-B.	1	.....	.....	2,340	14.99	0.45
Lewis	Chehalis	Superior No. 2	Unnamed	Sb.-B.	1	.....	.....	2,170	7.12	1.80
Lewis	Chehalis	Twin City	Unnamed	Sb.-B.	1	.....	.....	2,270	14.04	0.39
Lewis	Ladd	East Creek Ladd	No. 2	B.	1	.....	.....	2,240	18.05	1.31
Lewis	Ladd	East Creek Ladd	No. 3	B.	2	2,570	2,670	2,620	22.54	0.73
Lewis	Ladd	East Creek Ladd	No. 4	B.	1	.....	.....	2,910	26.78	0.93
Lewis	Ladd	Prospect	No. 1		1	.....	.....	2,710	28.73	1.17
Lewis	Ladd	Prospect	No. 5	B.	1	.....	.....	2,530	50.34	0.73
Lewis	Littell	Crescent	Unnamed	Sb.-B.	1	.....	.....	2,150	12.79	4.36
Lewis	Mendota	Mendota	Unnamed	Sb.-B.	3	2,230	2,350	2,290	15.97	1.51
Lewis	Morton	Prospect	Edlund	Sb.-B.	1	.....	.....	2,760	25.06	0.84

Softening Temperatures of Coal Ash from Western Coals—Continued

WASHINGTON—Continued

County	Town	Mine	Coal Bed	Type of Coal	No. of Samples	Softening Temperature Deg. F. Lowest	Highest	Average	Average Analysis of Dry Coal. Percentage of Ash	Sulphur
Lewis	Morton	Prospect	Unnamed	Sb.-B.	1	.....	.....	2,970	17.40	0.73
Lewis	Morton	Prospect	Unnamed	S.-A.	1	.....	.....	2,660	25.48	0.90
Pierce	Ashford	Mashel	Unnamed	S.-B.	2	2,710	2,850	2,780	33.77	0.59
Pierce	Ashford	Prospect	Nisqually Chief	S.-B.	1	.....	.....	2,650	25.72	0.44
Pierce	Burnett	Burnett	No. 2	B.	1	.....	.....	2,320	8.44	0.79
Pierce	Burnett	Burnett	No. 3	B.	2	2,350	2,420	2,380	13.74	0.39
Pierce	Carbonado	Carbon Hill	No. 1	B.	1	.....	.....	2,720	15.40	0.47
Pierce	Carbonado	Carbon Hill	No. 1 Coking	B.	1	.....	.....	2,210	18.86	3.31
Pierce	Carbonado	Carbon Hill	No. 2 Coking	B.	1	.....	.....	2,640	15.98	0.41
Pierce	Carbonado	Carbon Hill	No. 3 Coking	B.	2	2,640	2,840	2,740	17.54	0.36
Pierce	Carbonado	Carbon Hill	No. 4	B.	1	.....	.....	2,350	10.77	0.33
Pierce	Carbonado	Carbon Hill	No. 5	B.	1	.....	.....	2,890	16.99	0.58
Pierce	Carbonado	Carbon Hill	No 9	B.	1	.....	.....	2,840	16.10	0.54
Pierce	Carbonado	Carbon Hill	No. 11	B.	1	.....	.....	2,740	20.42	0.41
Pierce	Carbonado	Carbon Hill	Wingate	B.	2	2,180	2,190	2,180	9.66	0.82
Pierce	Carbonado	Carbon Hill No. 6	Wingate	B.	1	.....	.....	2,260	6.68	0.54
Pierce	Carbonado	Carbonado No. 4 N	Wilkeson	B.	2	2,610	2,730	2,670	15.04	0.34
Pierce	Fairfax	Fairfax	Blacksmith	B.	1	.....	.....	2,240	13.16	0.70
Pierce	Fairfax	Fairfax	No. 3	B.	1	.....	.....	2,740	10.51	0.54
Pierce	Fairfax	Fairfax	No. 7	B.	1	.....	.....	2,910	34.22	0.48
Pierce	Fairfax	Montezuma	No. 1	S.-B.	1	.....	.....	2,570	13.50	1.03
Pierce	Fairfax	Montezuma	No. 2	S.-B.	1	.....	.....	2,880	23.44	0.73
Pierce	Fairfax	Montezuma	No. 3	S.-B.	1	.....	.....	2,430	20.21	0.51
Pierce	Fairfax	Montezuma	No. 4	S.-B.	1	.....	.....	2,280	11.07	0.57
Pierce	Fairfax	Prospect	Montezuma	B.	1	.....	.....	2,980	35.15	0.57
Pierce	Fairfax	Prospect No. 1	No. 1	B.	1	.....	.....	2,370	8.46	1.19
Pierce	Fairfax	Prospect No. 2	No. 2	B.	1	.....	.....	+3,000	20.36	0.70
Pierce	Melmont	Melmont	No. 1	B.	1	.....	.....	2,880	19.49	0.73
Pierce	Melmont	Melmont	No. 2	S.-A.	2	2,850	2,910	2,880	18.28	0.43
Pierce	Melmont	Melmont	No. 3	B.	2	2,410	2,750	2,580	14.70	0.34
Pierce	Pittsburgh	Black Carbon	Black Carbon	B. (?)	1	.....	.....	2,760	24.19	0.57
Pierce	Pittsburgh	Pittsburgh	Lady Wellington	B.	1	.....	.....	+3,000	19.79	0.44
Pierce	Pittsburgh	Pittsburgh	Pittsburgh	B.	1	.....	.....	2,960	21.38	0.58
Pierce	South Willis	South Willis	Windsor	B.	1	.....	.....	2,300	21.87	0.42
Pierce	Wilkeson	Brier Hill	Unnamed	B.	1	.....	.....	2,700	29.91	1.21
Pierce	Wilkeson	Gale Creek	No. 1	B.	1	.....	.....	2,300	8.53	0.85
Pierce	Wilkeson	Gale Creek	No. 2	B.	1	.....	.....	2,390	6.22	1.00
Pierce	Wilkeson	Gale Creek	Queen	B.	1	.....	.....	2,220	9.83	1.04
Pierce	Wilkeson	Snell	Unnamed	B.	1	.....	.....	2,800	18.72	0.84
Pierce	Wilkeson	Wilkeson	No. 2	B.	3	2,720	2,850	2,780	17.99	0.47
Pierce	Wilkeson	Wilkeson	No. 3	B.	3	2,240	2,970	2,570	14.27	0.47
Pierce	Wilkeson	Wilkeson	No. 7	B.	1	.....	.....	2,380	10.38	0.44
Stevens	Valley	Valley	Unnamed	Sb.-B.	2	2,040	2,070	2,060	22.73	2.82
Thurston	Hurn	Hannaford No. 1	Upper Bench	Sb.-B.	1	.....	.....	2,150	7.69	0.55
Thurston	Tenino	Black Bear	Unnamed	Sb.-B.	1	.....	.....	2,570	27.61	1.79
Thurston	Tenino	King	Unnamed	Sb.-B.	1	.....	.....	2,210	14.12	3.09
Thurston	Tono	Hannaford	Unnamed	Sb.-B.	2	2,330	2,340	2,340	12.28	1.19
Whatcom	Bellingham	Bellingham	No. 1	B.	1	.....	.....	2,450	18.01	0.28
Whatcom	Glacier	Discovery Tunnel	Unnamed	A.	2	2,430	2,510	2,470	11.65	1.04
Whatcom	Glacier	Prospect	Unnamed	S.-A.	1	.....	.....	2,440	8.35	1.05
Whatcom	Glacier	Prospect	Unnamed	S.-A.	1	.....	.....	2,590	9.95	1.11
Whatcom	Glacier	Smith Tunnel	Unnamed	A.	1	.....	.....	3,000	9.56	0.97



NEW MEXICO'S SIX FIELDS

In 1919 this state produced 4,023,239 tons. In the northeast is the Raton field, mostly situated in Colfax County; in the northwest is the San Juan River field, with McKinley, San Juan and Rio Arriba the principal counties. An extension of this field into Valencia and Socorro Counties is known as the Datil Mountain field, while the two insignificant spots near Santa Fe constitute the well-known Cerrillos Field. Other fields are the Carthage fields, in Socorro County, and the Capitan field, in Lincoln.

tabulated in the second installment. Many of the coals tested from Utah showed ash of comparatively low fusibility, coming in the upper part of class 3; a considerable number of samples gave ash of medium fusibility, coming in class 2. A few samples gave refractory (class 1) ash. But little coal occurs in Idaho and Nevada and these states are of no commercial importance as coal producers. The lignites tested from North Dakota, South Dakota and Montana gave ash of rather low fusibility. The majority of the samples came in class 3 or the lower part of class 2. North and South Dakota tabulations are reserved for the second installment. The sub-bituminous coals tested from Montana and Wyoming (the tabulation of the latter state being held for the second part of this article) also gave ash of rather low fusibility, coming for the most part in class 3 and the lower part of class 2.

Most of the lignites and sub-bituminous coals tested have a fairly low sulphur content, consequently the low melting points of the ash from these fuels cannot be attributed to the presence of large amounts of iron in the form of pyrite, but rather to the presence of other mineral constituents in the proper proportion to form readily fusible mixtures.

Coalometer for Noting Coal Temperatures

SOME of our readers have drawn attention to the fact that the address was omitted of the distributor of the coalometer described in the article appearing on page 485 of *Coal Age* of Sept. 2, 1920, entitled "Device That Will Show the Temperature of the Depths of a Storage Pile." This instrument is sold by F. C. Thornley & Co., 31 West 43rd St., New York, N. Y.

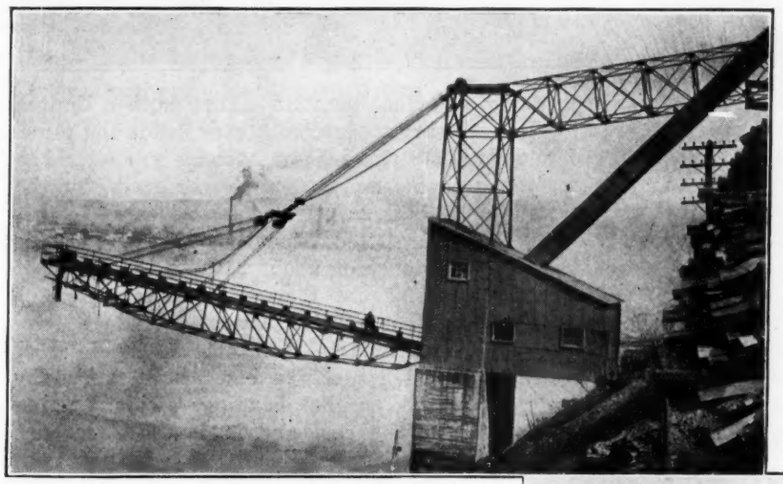
Rail and River Tipple Dumps Coal Inside And Conveys Coal by Belts

First River Tipple on Allegheny—An Adverse Grade and Shortage of Tipple Space Make It Necessary to Dump and Weigh Coal Underground, Where Weighing Apparatus and Car Haul Also Are Provided

By Donald J. Baker,
Wilkinsburg, Pa.

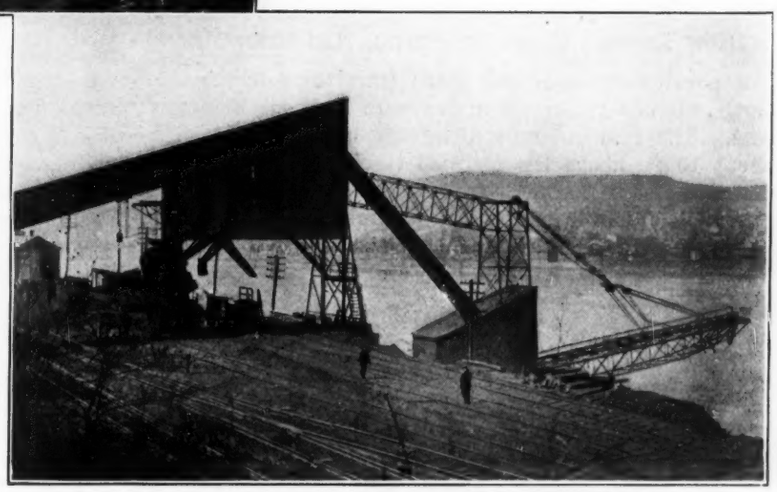
AT RENOULF'S BEACH, which is across the Allegheny River from Tarentum, Pa., can be found one of the most original and efficient tipples in the Pittsburgh district. It is the only tipple on the Allegheny River equipped to load coal for shipment by either rail or water. It is not this fact, however, that causes this structure to be distinctive, for though it stands alone on the Allegheny there are many tipples serving both rail and river on the Monongahela where the loading of coal barges from a tipple is an old practice. Its uniqueness lies rather in its design and in the mechanical perfection of the arrangements for handling the mine output.

In many stretches of the Allegheny River the banks rise steeply from the water, leaving scant space for the construction of the buildings that are needed around a river coal dump. This fact in itself has halted many an operator who purposed to develop valuable coal acreages outcropping along the water front. The construction of this tipple suggests a probable means of development of extensive beds of Freeport coal which expose their edges along the steep Allegheny River front. The surface buildings at this operation were constructed on the fill made by the Pennsylvania R.R. for its Allegheny Division. It is but a little over 100 ft. in width as measured from the foot of the hillside out to the bank of the Allegheny River.



Crusher House and River Loading-Boom

The lowest and highest stages of the river had to be provided for when this structure was designed. The steel tower and bridge are provided merely for the support of the loading-boom, which stretches, as will be noted, far out over the river.



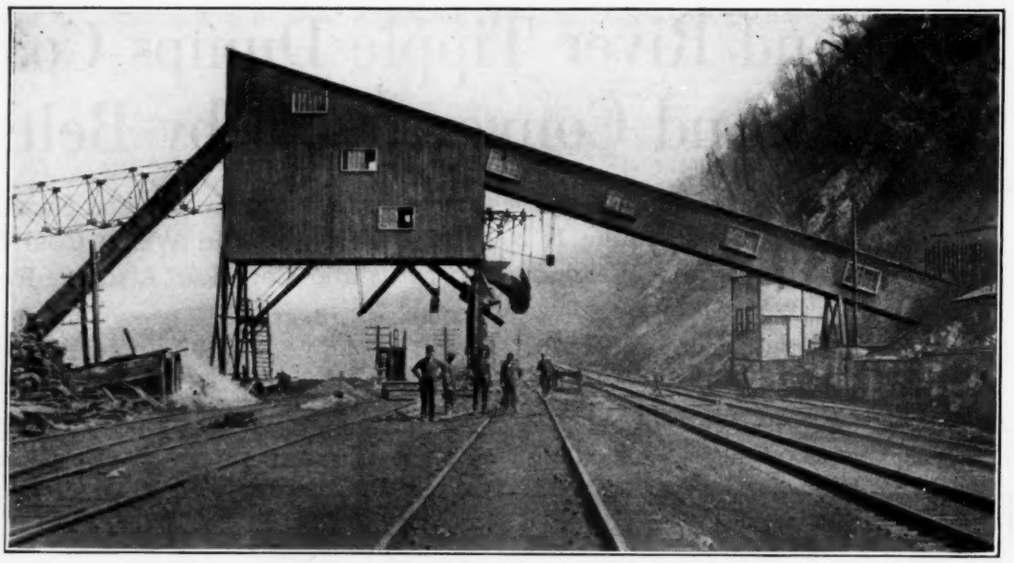
General View of the Combination Tipple

The plant of this company had to be constructed on a railroad fill on the hillside which is only about 100 ft. wide and largely occupied by railroad tracks. Note the steep chute by which the coal descends to the crusher building.

The tipple to which reference is made is located at the mine of the United States Aluminum Coal Co., which is owned by the United States Aluminum Co. of America. At this mine are employed 125 men, 115 of whom work underground. While the tipple has been designed for dumping 800 tons daily, this figure has been exceeded by several hundred tons on several occasions. This is not a large operation, to be sure, but it is a highly efficient one. Of ten men employed on the surface only two work on the tipple, and their feat of loading 1,000 tons in one day is notable.

Where Tipple Spans Railroad

Three sizes of coal may be loaded at this tipple. The seam outcrops 1 ft. above the railroad track and dips 3 per cent into the hill. Thus it was that this queer building eventuated.



The mine is only two and a half years old. It was opened and developed by Baton & Elliott, Pittsburgh mining engineers, who designed all of the surface buildings and laid out the general plan of the mine and the scheme of development to be followed. Till the mine was turned over to the Aluminum company it was under the control of the Baton Coal Co. Approximately 1,100 acres of the Upper Freeport bed of coal will eventually be removed through a single slope opening. All the output from this mine will, of course, be utilized by the Aluminum company. A large percentage of the tonnage will be shipped only three miles to New Kensington, where some of the largest mills of the company are located.

How Adverse Grade at Portal Has Been Met

A covered conveyor belt leads from the mine to the tipple. It is set squarely in line with the main haulageway. The coal outcrops along the hillside at a level about 10 ft. above the railroad tracks and then for a distance of 800 ft. dips away from the river on a 3 per cent slope. The bed beyond that point is fairly level.

In devising a surface plant to occupy such a limited area it was necessary to dump the cars inside the mine. In order to carry out this scheme, suitable grades had to be constructed on the 3-per cent adverse grade for the rapid handling of both empty and loaded cars. To this end the bottom was lifted from the inner end of the sidetrack for a distance of about 250 ft., the depth of the cut increasing as the road approached the mine opening. At the foot of this artificial grade a trip-feeder has been installed to facilitate the handling of the loaded cars and assure the empties of a run by gravity back into a parallel heading. This heading follows the dip of the coal and leads to a kickback situated in the front of the dump. This heading was primarily driven to serve as the storage yard for the empty cars as they come off the dump.

Locomotives bring the loads to the trip-feeding mechanism and then switch off to a parallel track and pick up a string of empty cars at the head of the main landing. In case the storage track for the loaded cars is filled when a trip arrives at the landing the locomotive may cut off and run into the empty storage yard

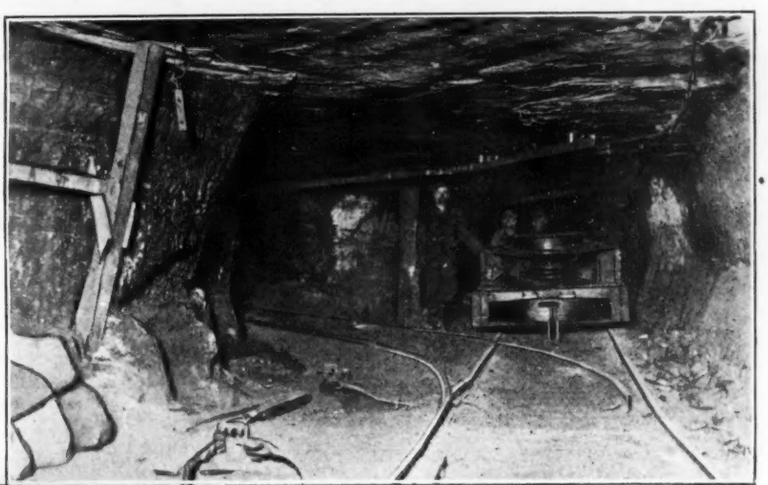
Loading-Boom Over River

A 20-in. belt serves to convey the crushed coal to a telescopic chute at the end of the boom. Rubber belting is the usual means of transportation at metal-mining plants. Coal mines are somewhat slowly following suit.

and allow the uncoupled cars to approach the trip-feeder by gravity.

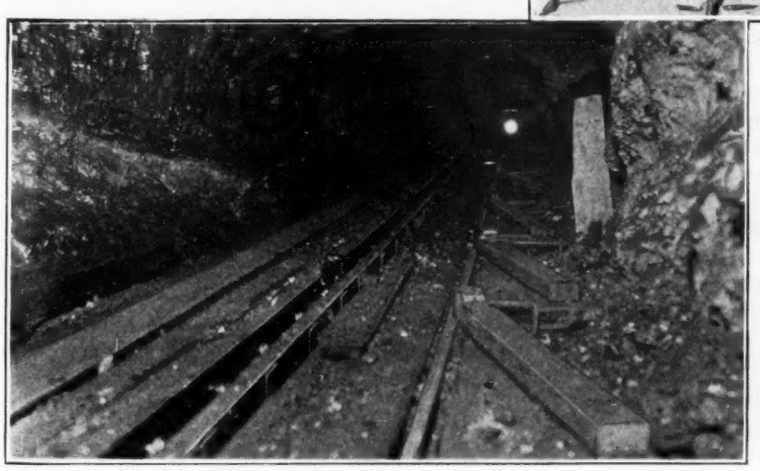
The loaded cars are uncoupled only as they pass over the trip-feeder. Each individual car then engages the car-haul by which it is drawn up a short 25-per cent slope. Motors for driving both trip-feeder and car-haul are situated in a small room off the bottom of the landing. At the head of the slope the cars are favored by a $2\frac{3}{4}$-per cent grade to the dump. Each car is weighed before being discharged.

The dumping mechanism is of the Phillips automatic crossover type and the cars discharge their contents into a 2-ton hopper. From the dump the empty cars run by gravity to a kickback, from which they enter the storage track. As has already been mentioned, the heading containing this storage track was driven through the coal and the cars are favored with a 3-per cent grade to the main haulageway.



Locomotive Returning from Main Landing

The heading to the left accommodates the empty cars from the kickback. Note that here the bottom lifting has entirely run out, as this illustration is taken at the inner end of the load tracks.



Mine-Car Haul on a 25-per Cent Grade

The slope of this haul can be appreciated by comparing it with the coal bed on the left. The coal itself is dipping 3 per cent in the same direction as the car haul, but the heavy slope of the latter produces the illusion that it dips in the opposite direction.

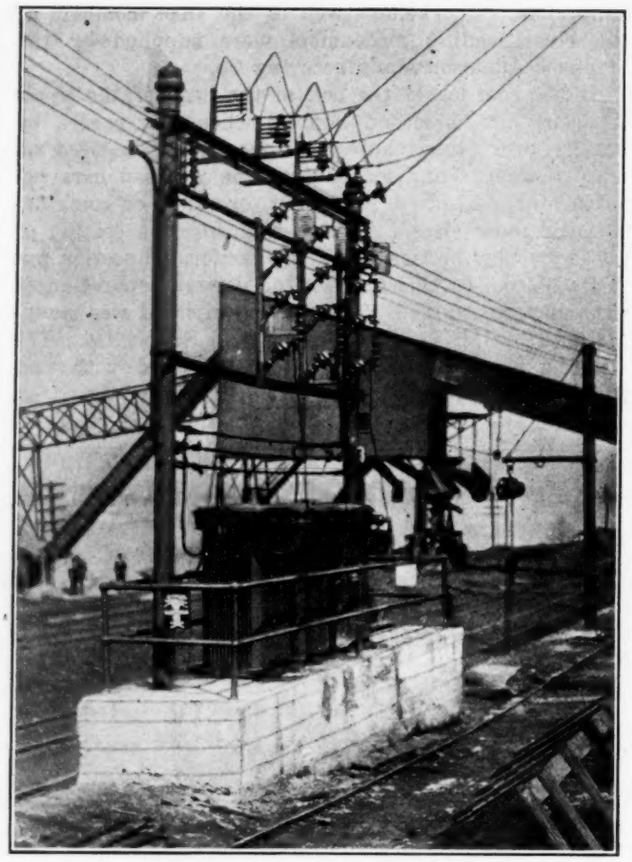
Belt in Condition After Two Years' Use

An apron conveyor beneath the dump hopper feeds the coal evenly to a belt conveyor. This apron is quite short and serves merely to receive the initial shock of the coal as it falls into the hopper. Thus the belt conveyor is never subject to wear other than that incident to transporting the coal to the tipple. This belt, which has already been in service for a period of nearly two years, is in a remarkable state of preservation. This is especially notable when it is considered that it operates on a slope of 25 per cent, which is a large angle of obliquity, making it difficult to transport the lump sizes. The belt as well as the steel members of the river loading mechanism were supplied by the Stephens-Adamson Manufacturing Co.

As the coal leaves the belt at the head of the tipple it drops into a second hopper, whence it passes by gravity over steep chutes. It may thus be sized on gravity screens and loaded into the railroad cars beneath as run-of-mine, lump, nut, or slack, or combinations of these sizes. A plate that forms a section of the chute may be removed and a perforated section put in its place. In this manner the desired separation of sizes may be attained. The tipple equipment was manufactured by the Phillips Mine & Mill Supply Co. The building itself has a steel frame covered with corrugated iron siding. It was erected by the John Eichleay, Jr. & Sons Co., of Pittsburgh. The conveyor belt is driven by a single 15-hp. motor situated at the head of the tipple.

When there is a shortage of railroad cars or it is desired to load the mine product into barges, a hinged steel door at the head of the belt conveyor is swung over and the coal is directed onto an apron conveyor instead of being allowed to pass through the railroad tipple. From this point it is lowered into a crusher and prepared for river shipment. The crusher house is situated on the bank of the river proper and rests upon concrete foundations, one member of which is a pier 12 ft. wide.

The loading-boom for the river tipple is built of structural steel. One end is supported by the pier under the crusher house, while the other is suspended by cables



AN OUTDOOR TRANSFORMER STATION
A minimum amount of space is afforded for the construction of the necessary plant units, and with purchased power this somewhat unusual difficulty has been readily met.

that reach to a framework rising above the crusher house and secured to the railroad tipple. The water level of the Allegheny River is far from constant, therefore an equalizing bar has been placed in the cables that support the boom.

Originally piles were driven into the river bed to form a pier to which the barges could be moored while being loaded. However, little penetration was possible in the river bottom at this point and these piles have since been washed out. In the near future a concrete pier will be constructed to serve the purpose which the piling was designed to fill. This pier also will act as a support for the boom during loading. The conveyor on the river boom is of the belt type and is 20 in. wide. It takes the coal from the crusher and delivers it to a telescopic chute, by which the barges are loaded.

While few men are employed on the surface at this plant, nevertheless the equipment there located is composed of the customary buildings although these are small, in keeping with the size of the mine as a whole. Included in the group of buildings that have been constructed either upon the railroad fill or at the foot of the hillside is a bathhouse and a first-aid dressing station. This operation while small is in every way complete. There is no adjoining town, most of the men employed at the mine living in Tarentum or one of the nearby river communities.

Power for operation of the plant and mine is purchased from the West Penn Power Co. The new power plant of this firm now under construction at Springdale, a few miles down the river, will, when completed, practically insure a continuous service to the mine, and no arrangements have been made to provide for an auxiliary power-generating unit. Current in the high-grade tension line comes to the mine at 33,000 volts and is then reduced through the customary outdoor transformer station, which in this instance has been built close beside the railroad tracks.

Fatal Accidents in West Virginia Coal Mines Increase

FATAL accidents in the coal mines of West Virginia during August totaled thirty-five as compared with twenty-nine in July. All but fourteen of such accidents last month resulted from falling roof and slate, there being two casualties in mine-car accidents, three through electric shock, five in motor accidents, two in railroad-car accidents, one in an outside mine-car accident and one from electricity outside the mines.

Logan had the greatest number of fatal accidents, seven. Raleigh County was not far behind with six, while Fayette County was third with five. There were four deaths in McDowell County, while Tucker and Marion counties each had three. In Kanawha and Mercer counties there were two fatalities and in Boone, Clay and Marshall, one each.

To Test Commerce Commission's Powers

A SUIT seeking to test the power of the Interstate Commerce Commission to enforce Service Order No. 9 of the Esch-Cummins Act as amended and passed by Congress Feb. 28, 1920, was filed in the U. S. Court at Covington, Ky., recently by the Arcadia Coal Co. and thirteen other producing companies in Bell, Knox and Harlan counties, Kentucky. The defendants in the suit are the Louisville & Nashville R.R., the U. S. Government and the Interstate Commerce Commission.

The complaining companies allege that they have millions of dollars invested in mining properties in the three counties named and complain that preferential assignment of coal cars is made to designated coal companies on the Cumberland Valley division of the Louisville & Nashville R.R., which makes it impossible for the complainant companies to market their coal and retain their employees. A preliminary injunction against the practice is prayed for in the petition.

West Virginia Penitentiary to Mine Own Coal from Shaft on Prison Property

A SAVING of $10,000 a year will be effected at the West Virginia penitentiary by the operation of a coal mine on penitentiary property, the entire tract of about sixty acres being underlined with coal, it is believed. By mining its own coal the state will be able to save the amount above stated, that representing the average annual expenditure for heat and power purposes. In order to be in a position to furnish fuel for the penitentiary by the beginning of cold weather, Warden Terrell had the work of sinking a shaft 80 feet deep begun some time ago, the necessary authority having been granted by the State Board of Control. The seam to be developed is 4½ feet in thickness.

Operations at the penitentiary mine, once it is in operation, should not be affected by a shortage of labor, as there are about two hundred prisoners in the penitentiary whose regular occupation has been mining.

Discussion by Readers

Edited by
James T. Beard

Two Types of Mine Officials

Of the two general types of mine officials, the man who is not pinned down to his place but can leave his job for a brief time without obstructing or hindering the work is the more efficient worker.

SOMETIME ago I recall reading an account, in *Coal Age*, of a superintendent being promoted to the office of manager of a large coal company. It was explained that he was the only superintendent employed by the company who could leave his job for a week without his absence affecting the operation of the mine. It strikes me that this is a vital factor in relation to safety in mine supervision.

The man who can leave his job temporarily and the man who must stay on the job constantly are representatives of two distinct types of mine officials, from the president down. The former is responsible for the conditions that allow him a certain amount of liberty, and the latter is responsible for the conditions that keep him a slave to his work. Each of these types of officials has built up an organization that is the controlling factor in determining his freedom of movement and action.

Characteristics That Determine the Personalities of Men

There are certain individual characteristics by which we recognize the type of official, whether we find him with a gang of men unloading supplies, or in the office directing the activities of the corporation. The man who can leave his job is genial, communicative and possessed of a fair-minded judgment. His personality has built up an organization that will stay.

On the other hand, the man who must always be on the job is either grouchy, domineering and obstinate, or he lacks the faculty of training men in the performance of their duties. His personality has developed in his men a spirit of defiance and distrust that requires his constant supervision of their work.

Mark these two men—the one has a smile, the other a frown. The one makes many suggestions and gives few orders, while the other either issues gruff orders or must do a good portion of the work himself to show how he wants it done. The one believes in his men and has inspired them with a good degree of self-confidence that makes them independent workers. The other believes in himself; has little confidence in his men whom he has grown to regard as incapable of profiting by his instructions, while the truth is the fault lies with himself. The one plans his work in conference with his men, while the other works out his own plans alone, leaving the men in ignorance of his purpose and making it impossible for them to become independent workers.

Why there is such a difference in the make-up of men may be difficult to explain. Some men seem to be born with dispositions they cannot shake off. Some make no effort in that direction, but appear to be dominated for good or ill by their environment. Opportunities that are open to them pass unimproved. It is probable that their early training has much to do with the ingrowth of such a character, which is generally difficult to eradicate.

There are many men who fail to learn by experience or observation, and there is little hope of such making efficient or safe mine officials. But, whatever the cause of the observed differences in the dispositions and abilities of men, the results are the same. The official who seeks to intelligently instruct his men by sharing with them the information he possesses and bringing them to realize his own and their responsibility, is not only training them to become independent and faithful workers whom he can trust to perform equally well in his absence as when he is near them, but he is building up a safe organization and has rendered his own service to the company invaluable.

Compare, for a moment, the attitude of such an official with that of one who is jealous of his position, keeps his men purely as subordinates and fails to share with them his responsibility, which would cause them to take an active interest in the performance of their work. Observe closely the effect produced in relation to the safety of the mine and the upbuilding of an organization that stands for success.

The official that makes comrades of his men will find that they will repay him in time. Men naturally respond in kind to the sort of treatment they receive. Let me say, then, for promotion, for salary increase, or a vacation on full pay, I vote for the man who can leave his job with the assurance that it will not suffer in his absence.

George N. Lantz.

New Straitsville, Ohio.

Why American Miners Produce More Coal Than British Miners

Conditions under which the miners work in the mines of Great Britain all tend to produce a lesser tonnage per man, per day, than in American mines.

WITH much interest I have read the various reasons given why American miners produce more coal, per man, that British miners. The last letter on this subject was that of T. J. Shenton, *Coal Age*, Aug. 12, page 350. Neither he nor previous writers, however, have given what I would say is the real cause of the surplus in favor of the American miner.

In the first place, the American miner must work eight hours or thereabouts, at least that is the time he is underground. In the counties of Durham and Northumberland, a coal miner is underground from six to seven hours, but he actually works only about four hours, as he has a long distance to walk in order to reach his place. If he rides to his work, it is at a speed no faster than a walk.

In that country the miner goes below at 10 a.m. and comes again to the surface at 4 p.m. Here, the American miner is lowered into the mine at 7 a.m. and brought to the surface at 4.45 p.m., where I am working at the High Shaft, Steubenville, O. I understand that in many nonunion mines it is not uncommon for the miner to remain underground twelve hours of the day.

Again, the British miner works for a minimum wage of about $4 per day, which is given him whether he earns it or not. He may only mine a bushel of coal, but he has the same wage as if he mined 8 or 10 tons. On the other hand, the American miner is only paid for what coal he mines, which may not be more than a ton, owing to a shortage of cars, a fall of rock or a breakdown in the equipment that throws the mine idle. When a British miner finds he will be unable to produce a good tonnage for the day he will often quit or lie down, knowing that the minimum wage is good to him.

In Great Britain, Saturday is a half holiday and the miners quit at noon but are paid for a full day. The daymen are likewise paid for a full day. This factor increases the cost of British coal per ton and reduces the production per man, as compared with that in this country.

The mining laws of Great Britain, being more strict than those in America, forbid the shooting of coal "off the solid," which is practically unknown in that country, where the miner must *kerve* (undercut) the coal before shooting. The American miner is privileged to get his coal in any manner as best he can, with or without the mining, which is often done by the use of coal-cutting machines. To my mind these are the chief reasons for the surplus American production.

Steubenville, O. H. S.

Things Often Overlooked That Increase Costs in Mining

It is the minor details, which many mine foremen are prone to neglect and postpone giving them the needed attention, that increase cost of production in mining.

MINING officials, particularly mine foremen, have the matter of costs brought to their attention more than any other item connected with the work. Every effort is made to adopt methods and schemes that will reduce the cost of operation. In the excellent letter of M. L. O'Neale, *Coal Age*, Aug. 12, p. 348, appears the heading "Contract Labor Reduces Cost."

What is on my mind at present, however, is not so much the adoption of general plans for reducing the cost of mining. My desire is to call attention to lesser details that seldom seem to worry the average foreman. It is these smaller matters that are so often overlooked but that seriously affect the cost of getting out the coal. In the hope that some mine bosses whose duty it should be to discover and remedy these smaller defects will see and read this letter, I am recounting a few of the items that affect the daily cost-sheet of the mine.

Having been through the mill myself, I realize the difficulties with which the mine foreman must contend; but experience teaches that a car derailed on a poor piece of track may cause a wreck that will mean a few hundred dollars in loss to the company before it is cleaned up and coal is again running. Even with a less serious result, the delay may mean one or more trips less in the day's run. On such an occasion, the mind of the foreman reverts at once to his cost-sheet.

Again, it is no uncommon thing to go into a mine and find the ditches on the main heading blocked with dirt and the water running down the side of the rail and often flooding the track. The foreman has been constantly passing this place, perhaps several times a day, often in an empty car. Occasionally he will send a man with a shovel to throw the dirt from the ditch to the opposite side of the track where it is allowed to accumulate, until the motor scrubs along the rubbish heap, or plunges through the water that covers the submerged rails, when making the trip in and out of the mine. For a distance, the entry is almost impassable from mud and water.

The mine foreman expects sometime that he will be able to improve this condition; but, as long as the motor can drag the cars through, the hoped for improvement is deferred. The motor comes to the tipple or the shaft bottom splashed with water and mud, and the cars are in the same condition. It is needless to remark that it is poor economy to delay the work needed to put a road in good condition. It would not have been so bad had proper attention been paid to keeping the ditches open, and not blocking the road and manholes with the dirt that should have been loaded out of the mine at the time.

To Put Off Attending to Needed Repairs Is Always False Economy

It is always false economy to pass over a bad piece of track, or a worn out frog, a loose joint, or a railbond that needs attention and think that this can be done at a more convenient time. The proper bonding of rails on a haulage road where electric haulage is employed is often overlooked, because it is something that cannot be seen; but its effects are readily apparent in the increased cost of haulage.

The experienced motorman knows when the bonding of the rails is efficient. It is common to see the headlights of a mine locomotive dim when the controller is moved, the cause being frequently due to the lack of the efficient bonding of the rails. The same defect may cause a cutting machine to stop or compel a machineman to release his clutch when the locomotive is operating in that vicinity.

In my opinion there is more time lost in a mine through the bad bonding of the rails on main haulage roads than on any other single item. Experience teaches that where a mine is electrically equipped there should be a mine electrician whose constant duty is to look after the equipment throughout. He should examine the bonding regularly and remedy all defects.

Another matter that is a constant source of expense and trouble is the handling of the water that accumulates in a mine. The average mine boss never likes to put a pump into a place, except as a last resort; and when once in place it is there to stay. Often it happens that a ditch would have served better than the pump to drain the place. The care of a pump is a great consideration, the packings, valves and suction need constant attention, which means continual expense.

Again, many a foreman fails to realize the trouble that will follow when a stump of coal or a few posts are left standing in the waste. By preventing the fall of the roof, extra weight is thrown on the entry pillars, causing the bottom to heave on the road and, possibly,

bringing on a heavy squeeze that may result in the loss of hundreds or thousands of tons of coal before it can be stopped or controlled. To arrest a good squeeze is no simple matter, as every practical foreman knows to his own sorrow.

Speaking of haulage, there comes to my mind an instance where the main headings dipped about 7 per cent. The face headings were turned to the right and left to the main road, on a grade of about 3 per cent in favor of the loaded cars, Butt headings were turned off the face headings and parallel to the main road. The rooms turned off the butts were driven parallel to the face headings.

The 3 per cent grade in the rooms made it difficult to handle the cars; and the entire arrangement, which originated in the office, cost the company thousands of dollars. I will only mention in closing, that great losses result in defective ventilation, contracted airways, leaky stoppings and doors, all of which add to the cost of operating the mine.

THOMAS HOGARTH,
McIntyre, Pa. Supt. Glenside Coal Co.

Organized Labor Not Opposed to Contract Mining

The only restriction imposed on contract mining by the union is that the contract price shall be high enough to cover the wage scale of the district at the time.

SPEAKING of the fact that most of the mines in this country are unionized, M. L. O'Neale asks, "What has the union to say as to one of its members doing something a little out of the ordinary, becoming a little boss of his own, working a little harder and earning more money? Does it sanction or permit such work?" This quotation is taken from a letter entitled "Contract Mining, the Company, the Miner and the Union," which appeared in *Coal Age* Aug. 12, p. 348.

While I am not a member of the U. M. W. A., I want to see the organization continued. Being a lover of fair play, I have often felt that there is a grievous misunderstanding of the principles of that body, which is at times unjustly criticized by the general public and by many miners who appear to be ignorant of its principles, perhaps because they have been unable to read its constitution and understand its bylaws.

Let me say, first, unquestionably the operator of a coal mine, large or small, has a right to use the cheapest means or methods of getting out the coal and putting it on the market. In satisfying his men, securing orders for his coal and selling it in the open market, he is in competition with other operators. The market price of the coal is not always in his control and the question of making a reasonable profit, after meeting all the necessary expenses for materials, supplies and labor, is frequently a difficult one.

Then if an operator enters a contract agreement with two or more men to dig, load, haul or deliver coal to a specified point, at a fixed tonnage rate that will not fall below the wage scale in the miners' agreement with the operators of that district, there can be no objection on the part of the union.

To my knowledge the United Mine Workers of America have never made an agreement with an operator in which any objection was expressed to contract work, so long as the contract price was sufficient to cover the agreed wage scale.

Contract work in coal mines should be encouraged as long as a square deal is assured to all parties. For instance, six miners are hired to draw out the chain pillars on an entry 2,000 ft. from the slope parting, at a specified rate of $1.07 a ton. It is optional whether the foreman or the men pay for the hauling of the coal. Thus, say the foreman hires a driver at $6.25 a day, reserving the right to have the driver do other work when the contractors lay off; or, the contract price may be put at $1.20 a ton and the men pay for hauling the coal, in which case the driver shares equally with the men by doing other work with them.

In reference to the contract system making a man his own boss, every miner who digs coal is practically his own boss. The harder he works the more money he earns. The only restriction placed on him is that he shall work his place in accordance with certain rules and regulations. As Mr. O'Neale has stated, there are among the miners many fine, red-blooded Americans, men who are capable of handling contract work, and every wise foreman will grasp the opportunity of contracting with such men. Let him be assured that the union has never restricted miners or curtailed their opportunities. In proof of this assertion let me quote from a union agreement with an operator, which reads as follows:

> The Company shall see that an equal turn of cars is offered each miner and loader, and that he is given a fair chance to obtain the same. . . . No individual contract shall be made if it conflicts with this agreement. . . . Any member guilty of accepting or contracting for a less compensation for his labor than the prices agreed upon in our contract with the operator shall be deemed guilty of an offense and shall be fined $25.

The foregoing shows clearly the attitude of the organization toward contract labor, the only provision being that wages are not to be reduced thereby. Let me say here that there is nothing wrong in the ideals set forth in the constitution or in the aims and purposes of the organization. Where trouble has arisen it has been due to the unjustified action of certain radical local leaders who, at times, have acted to close a mine in utter disregard of their agreement. For this they have often been censured severely by the higher officers of the organization. Bearing on this point, let me quote the following extracts from the constitution of the order:

> In case of any local trouble arising in any mine through such failure to agree with such boss or foreman and any miner or laborer, the pit committee and the pit boss are empowered to adjust it. In case of their disagreement it shall be referred to the superintendent of the company and the local executive board of the U. M. W. A. If they should fail to agree it is then referred to the president of the district and the manager of the company. In all cases the miners and the parties involved must continue at work, pending an investigation and adjustment, until a final decision is reached.

What is needed in America, today, is for every man who works around a coal mine to dig in and make as much money as he can, whether he is working on contract or employed by the company. No right-minded operator, and certainly not the miners' organization, will tolerate any disreputable profiteering of a miner against his fellow worker.

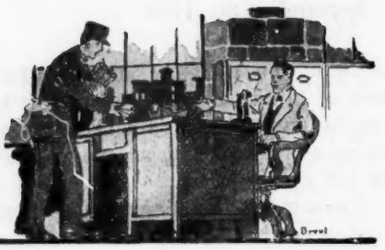
All must stand for a square deal for the company, the union and the miner, whether the miner is a member of said union or an independent worker. The question of "open shop" or "closed shop" should not come in for consideration, and no advantage should be taken because one good miner can earn more than a fellow working at the same task under the same conditions.

Farr, Colo. ROBERT A. MARSHALL.

Inquiries of General Interest

Answered by

James T. Beard

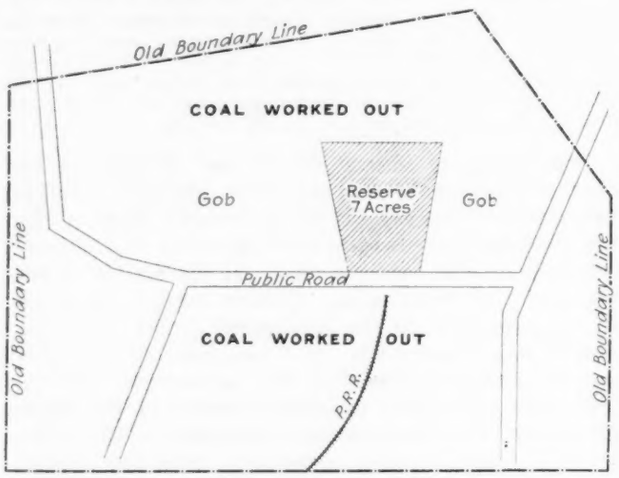


Working a Coal Reserve

Does it pay to sink a shaft and install the necessary equipment for the development and working of a small coal reserve that was left when the surrounding coal properties were worked out on leases?

BEING a constant reader of *Coal Age* for several years and having noted a number of instances where helpful suggestions and valuable information have been given in answer to the requests of its readers, I am constrained to submit the following proposition, hoping to obtain similar help myself:

Sometime since I came into possession of a property on which the coal rights had been reserved by a former owner, at a time when the surrounding coal was leased to an operating company. As indicated in the accompanying sketch, practically all of the surrounding coal



PLAN SHOWING AN ISOLATED COAL RESERVE

was worked out, leaving this small reserve of seven acres, which represents the property in question. The coal is of good quality. The seam is nine feet thick and lies at a depth of 180 ft. below the surface. As further marked on the sketch, there is a stub switch of the Pennsylvania Railroad extending close to the property line. Assuming that the former openings have all caved and are unavailable at the present time, the question is, Will it pay to go after this coal and how can the matter be accomplished? OWNER.

———, Pa.

In reference to this proposition it can be stated that one would hardly be warranted in making the necessary investment to open, equip and develop such a small reserve, with a view to shipping the coal to market. We would add, however, there are a number of instances where shafts have been sunk and slopes driven to develop small properties for local trade.

Putting aside the question of possible damage to the surface by the extraction of this coal, and assuming a reliable country trade, it is quite possible to realize on such a proposition as this by securing a thoroughly reliable and competent coal miner who has had experience in sinking and developing mines and giving him charge of the work.

With good management it is possible to estimate on realizing a two-thirds extraction of the entire seam. while making ample allowance for losses in mining and handling the output. This would mean an approximate available net tonnage of 75,000 tons.

The success of the undertaking, from a financial standpoint, will depend wholly on the ability and judgment of the man in charge. A rough estimate of the cost might be made about as follows: Sinking, including labor and material, $3,500; entry driving, room turning and other allowances, $1,500; timber, rails, ties and other supplies, $2,000; shaft equipment, including a hoisting engine, cages, pump, piping, scales, screens, etc., $3,000; mine cars and mules, $1,000; repairs and renewals, overhead charges during the life of the mine $9,000; making a total expenditure of, say $20,000 for mining and marketing 75,000 tons of coal.

Finally, allowing for an average of 50 tons per day, for 250 working days a year, the mine would be exhausted in $75{,}000 \div (50 \times 250) = 6$ yr. To realize a profit of 10 per cent on an assumed investment of $20,000 for six years will require a net profit of $6\ (0.10 \times 20{,}000) = \$12{,}000$, which would demand a net profit per ton of $12{,}000 \div 75{,}000 = \$0.16$, or 16c. per ton.

Volumetric Capacity re Yield of a Fan

PERMIT me to refer to the inquiry of Clifford R. Clark, which appeared in *Coal Age*, Aug. 12, p. 351 where he states the 15 x 4 ft. Jeffrey fan, running at a speed of 110 r.p.m., produced 250,000 cu.ft. of air per minute against a water gage of 3.5 in. Can this be true?

According to my understanding, a fan cannot give more air than its own volume, which in this case is $110\ (0.7854 \times 15^2 \times 4) = 77{,}754 +$ cu.ft. per min. Also, the theoretical water gage due to tip speed of $110\ (3.1416 \times 15) \div 60 = 86.4$ ft. per sec. is $0.0144\ (86.4^2 \div 32.16)\ 0.0766 = 3.34$ in.; and the actual gage would probably not exceed $2\frac{3}{4}$ in.

Being acquainted with this mine, let me state that the mine resistance in winter is much greater than in summer, owing to the closing of the escape shaft to avoid freezing. I believe this accounts for the difference in power consumption in summer and winter.

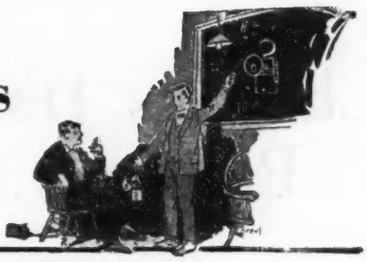
Peru, Ill. FACE BOSS.

It is wrong to suppose that the possible yield of a fan is limited to its volumetric capacity per revolution. A good fan will often deliver from three to four times its own volume. Mention is made, in the excellent article by David W. Evans, *Coal Age*, Sept. 2, p. 487, of a fan he designed that gave over four times its own volume.

Examination Questions

Answered by

James T. Beard



Mine Foremen's Examination, Held at Old Forge, Pa., May 4, 5, 1920

(*Selected Questions*)

Ques.—What principle in ventilation is applied when a regulator is placed in an airway in a mine?

Ans.—The principle involved in the use of a regulator is to equalize the resisting power of two unequal airways. The airway having the least rubbing surface, per square foot of sectional area, will have the least resisting power, and when a circulation is set up will take the larger proportion of the air. But, as a rule, such airway requires less air and the other more air than is given by the natural division of the current. Therefore, it is necessary to introduce a regulator to obstruct the flow of air in the airway having the least resisting power, in order to bring about the desired proportion between the two airways. The placing of a regulator in an airway has the same effect as to increase its length or decrease its sectional area. It increases its resisting power and makes the resistance of the two airways or splits equal when each is passing its required amount of air.

Ques.—Make a classification of the accidents occurring in the anthracite mines and state how, in your judgment, they may be diminished.

Ans.—In the order of their importance, mine accidents may be classed as follows:

1. Accidents due to falls of roof or coal. The number of such accidents can be diminished by strict compliance with the mining laws and mine regulations; constant and more through supervision of the work; and maintaining a good supply of needed timber in each working place.

2. Accidents due to the movement of cars. These can be diminished in number by increased discipline in the mine; suitably punishing all violations of the mine rules and regulations; and observing strict compliance with the laws relating to the haulage, hoisting and dumping of coal.

3. Accidents arising from the handling and use of powder and other explosives. To lessen the number of accidents of this class, strict regulations should be made and enforced at the mine. Miners should not be permitted to fire their own shots, except as they are authorized by the mine foreman, after each shot has been properly placed and charged. The use of permissible powders, in place of black powder, will also reduce the number of these accidents. The degree of safety in blasting will depend largely on the character of the rules and regulations made to safeguard this work, and the discipline exercised in the mine.

4. Accidents due to the presence of gas in mines. The number of these accidents can be reduced by a more thorough inspection of the mines, which should be continued throughout the day when the men are at work. Each safety inspector or fireboss should have only such territory as he can inspect and supervise thoroughly. A proper and adequate system of ventilation is essential to eliminate the danger of gas.

5. Accidents due to the lack of safety appliances and the safeguarding of all shafts, slopes, inclines, machinery and all electrical equipment.

Ques.—In a mine where 535 men are employed how many splits of air will be required by law? What will be the minimum quantity of air required?

Ans.—The Anthracite Mine Law prohibits the employment of more than seventy-five men on a single air split at the same time. The number of splits required to comply with this law where 535 men are employed in the mine is $535 \div 75 = 7.1$, or say eight splits. The minimum quantity of air required, in this case, is $200 \times 535 = 107{,}000$ cu.ft. per min., unless the conditions are such that the mine inspector decides a larger quantity of air is necessary.

Ques.—What constitutes a second opening to conform with the mine law?

Ans.—The Anthracite Mine Law (Art. 4, Sec. 1) requires that not less than two openings shall be available for ingress and egress for every person employed underground, except in the development of a new mine, or a new lift, while the work of making connection with such an opening is in progress and not more than twenty persons are employed in the mine at one time. The two openings must be separated by strata not less than 60 ft. in breadth underground and 150 ft. in breadth at the surface.

Ques.—(*a*) What is the first essential in the economical haulage of coal? (b) What are the principal things to be looked after on haulage roads in mines?

Ans.—(a) The question of chief importance in securing economy in mine haulage is the adoption of a suitable system and method of hauling the coal. This includes the laying out of the haulage roads so as to facilitate the movement of cars in respect to grades and uniform distribution of work. The size and equipment of the mine cars must be such that they can be readily handled under the conditions that prevail in the mine. The main haulage road should be laid out so as to have a slight grade in favor of the loaded cars.

(b) It is important to maintain all track and rolling equipment in good condition. To insure safety separate travelingways should be provided and no person permitted on the haulage roads except those whose duties require them to be there. Where men must travel a haulage road there should be a good clearance space maintained on one side of the road and refuge holes should be provided at short intervals and kept free from all obstruction. Special attention must be given to the timbering to prevent roof falls on the roads, which endanger the lives of drivers and motormen and cause delay. Every effort must be made to provide a full trip in each section of the mine, at stated intervals, and the movement of drivers or motormen must be so arranged as to avoid delays waiting for each other.

Chemists Discuss Colloidal Fuel and New Problems in the Carbonization of Coal

Heat Produced by Devolatilization and Decomposition of Gas Cokes Coal — High Temperature Opposes Coking — Canada Is Looking to Lignite for Fuel — Texas Wants It to Make Gas — Conservation to Meet Coal Shortage — Blazing Colloidal Fuel Sinks in Water

BY STAFF CORRESPONDENT

IN CONNECTION with the semi-annual meeting of the American Chemical Society, the Industrial and Engineering Division held a symposium on fuels on Sept. 9 at Chicago, Ill. This program was arranged by a committee under the chairmanship of A. C. Fieldner, of the Bureau of Mines. Four major topics were discussed by the various speakers: (1) Carbonization of coal, (2) Liquid-fuel problems, particularly those of gasoline, (3) The general problem of fuel conservation, and (4) The problem of sulphur in fuels. This session aroused much interest because of the widespread attention now being given to fuel matters and the present inadequacy of the industrial fuel supply.

Parr declares products of low-temperature distillation and decomposition differ essentially from those formed at high temperature. Stansfield says a ton of dry lignite gives two-thirds of a ton of "char." Schoch obtains 2,000 to 3,000 cu.ft. of gas of 600 B.t.u. from a ton of Texas lignite. Sheppard asserts colloidal fuel is a more powerful fuel than oil. Yancey and Fraser find that no law seems to govern the relation of pyritic and organic sulphur in coal layers.

S. W. Parr presented a discussion of low-temperature carbonization, by which he meant treatment of fuel at temperatures below 750 to 800 deg. C. He indicated that up to this temperature he considered, to all intents and purposes, only the primary products of distillation; the secondary products, which are the results of high-temperature decomposition, do not make their appearance in any quantity until higher temperatures are reached. He criticized the usual method of rating the cokability of coals by the ratio of oxygen content to hydrogen content. He pointed out that conditions under which the coal is treated are of greater importance than this ratio, because if the temperature is properly controlled the oxygen compounds are prevented from interacting with those compounds by which the coke is bound together, such interaction serving to destroy the bonding power of which the coal is possessed.

CAN COKE A BADLY-WEATHERED COAL

Mr. Parr mentioned a certain badly-weathered coal which was still suitable for coke production if coked under proper temperature control and advanced the theory that those constituents which are soluble in phenol react upon heating with oxygen compounds and give compounds of variable composition which prevent coking. Particularly did he emphasize the fact that the sulphur, nitrogen and oxygen compounds formed seemed to violate the laws of definite compounds, as the percentage composition of those compounds varied by small steps in a way inconsistent with our usual concept of definite composition.

Because of the low-heat conductivity of the coke mass through which heat must be transferred by ordinary systems of coking this author has undertaken to use the exothermic heat of reaction during coal carbonization to furnish the bulk of the heat required for cooking. He refers to these reactions as proceeding "autogenously."

The main points of interest in this paper of Mr. Parr, which he presented with T. E. Layng and which was entitled "Low-Temperature Carbonization and Its Applicability to High-Oxygen Coals," are briefly summarized in the following paragraphs:

"(1) Under the conditions indicated, the volatile constituents resulting from carbonization are substantially either the primary products of decomposition or of interaction between such products, and bear but little relation to the byproducts yielded by high-temperature conditions.

"(2) The yield of condensible products in the form of tar or oils is from 20 to 30 gal. per ton of coal, depending on the carbonization method employed.

SURVEY OF PROGRESS OF DEVOLATILIZATION

"(3) By separating the coking from the non-coking constituents of high-oxygen coals, and observing the products of decomposition from each at progressive stages of temperature, a knowledge has been gained as to the order of precedence in the decomposing process and also of the character of the products at these successive stages.

"(4) In the case of high-oxygen coal, especially, interactions between certain products of decomposition may take place whereby the bonding property of the coking constituent may be partly or completely destroyed.

"(5) Heat cannot be transmitted by conductivity alone into the center of a non-conducting mass where there is a workable cross-section of 16 to 20 in., except where there is a high-temperature environment, which, of course, would defeat all the ends sought in low-temperature distillation.

"(6) It is possible to utilize the exothermic reactions inherent in high-oxygen coals in such a manner as to

secure the autogenous transmission of heat to the center of an otherwise non-conducting mass and to do it without attaining ultimate temperatures in excess of the prescribed limit.

"(7) The time for autogenous heat transmission is governed by the speed of the exothermic reactions involved and is estimated to be approximately one-fourth of the time required for heat penetration as obtained under high-temperature conditions.

"In general, it is believed that all the products of decomposition have a higher intrinsic value as delivered under low-temperature conditions, chiefly because excessive secondary decompositions are avoided. The solid residue is a smokeless fuel containing from 5 to 15 per cent volatile matter; it is free-burning and of good texture and is primarily adapted to use as a domestic or factory fuel. Whether suitable for metallurgical purposes or not has not been determined." At the present time Dr. Parr has not proposed any definite industrial processes but is working on a basis of a discontinuous operation with 35 lb. samples—i.e., on a commercial laboratory scale."

Carbocoal Furnace Lined with Carborundum

Dr. Harry A. Curtis, chief chemist of the International Coal Products Corporation, reported on the carbocoal process, which has been developed to the point of the installation of a plant having a daily capacity of 350 tons of product, using 500 tons of coal per day. The general process is described by him as follows:

"Carbocoal, as it is called, is a bituminous coal which has been changed into a smokeless fuel resembling anthracite. It is prepared by crushing the soft coal and carbonizing it at the relatively low temperature of 900 deg. F. The carbonizing is performed in a horizontal retort about 7 ft. in diameter and 120 ft. long, lined with carborundum. The coal is continually stirred and moved slowly through the retort by means of paddles mounted on two heavy steel shafts running lengthwise of the retort. Each retort has a capacity of about a ton an hour, the Clinchfield plant being equipped with twenty-four of these retorts.

"Carbonization of the coal in this manner yields about twice as much tar as is obtained from the ordinary coking process, but the semi-coke obtained is quite soft and friable. It can be used directly under the boiler of a power plant or put into a gas producer, but is not in good shape to market as a general fuel for domestic and industrial use. In the carbocoal process the soft semi-coke is ground, briquetted with pitch, and the briquets then carbonized for about six hours at 1,800 deg. F. The effect of this high-temperature carbonization is to render the briquet hard, dense and smokeless —quite unlike any other fuel on the market.

"A further substantial yield of byproducts is obtained during the second carbonization, so that the carbocoal process represents a highly economical method of producing a smokeless fuel from bituminous coal. The high yield of oils obtained also is of great importance in view of the rapidly diminishing supplies of petroleum in the United States and the enormous growth of industries which use oil products such as gasoline, motor spirits, lubricating oils and fuel oil."

A paper entitled "Carbonization of Canadian Lignites," by Edward Stansfield, was presented by Mr. French, the engineer who has been associated with this investigation, covering the work done jointly by the Department of Mines and the Lignite Utilization Board of Canada. This report described the early small-scale experiments and the later larger-scale tests which have led up to the design and construction in southern Saskatchewan of a plant which is expected to handle two hundred tons of raw lignite per day.

The lignites used are available at about $1.75 per ton at the mine. A typical analysis of the material employed, on a moisture-free basis, is as follows: Water of constitution, 31.8 per cent; volatile, 28.9 per cent; fixed carbon, 34.1 per cent; ash, 5.2 per cent. The heating value is approximately 4,260 calories per gram. From this material the following results are reported:

	Percentage of Weight of Dry Lignite	Percentage of Original Heating Value
Water	11.7	—
Gas	17.0	8.3
Crude Tar	4.1	6.0
Residue (char)	66.7	78.1
Loss	0.5	7.6

These represent yields of about 3,150 cu.ft. of gas having heating value of 385 B.t.u. per cu.ft., 5 3 gal. of tar, 910 lb. of residue and 10.2 lb. of ammonium sulphate per ton of dry lignite treated. The process is developed to a point where the tar is distilled and the pitch from this used as a binder for briquetting the char. The principal object of this work is the development of a solid fuel; thus less effort has been made to recover gas and byproducts. The commercial plant is nearing completion and it is hoped that operations will begin within a few months.

Texas Experimenters with Lignite Seek Gas

As a contribution to the discussion of this report, E. P. Schoch, professor of the department of chemistry of the University of Texas, presented a discussion upon the utilization of Texas lignites. The effort in this work was to obtain a supply of city gas, and the tendency was, therefore, along different lines from that which had been sought in the Canadian work.

Special attention has been given to the operation of the retorts under pressure. It had been found that this gave a higher yield of gas, but at the expense of a lower yield of tar. This result probably was caused by the slower elimination of the vapors from the retort, causing a greater cracking and, therefore, larger gas yield from the otherwise liquid constituents.

As a result liquid purification was adopted and favorable results are reported. From 2,000 to 3,000 cu.ft. of gas per ton of raw lignite was thus obtained, with a heating value in the gas approaching 600 B.t.u. per cubic foot. The yields of coke and tar were of the same order as those reported on the Canadian material.

The advantages claimed for this method of handling the coal were: Coke of a high thermal value, gas immediately usable for the city supply, a maximum yield of tar, the opportunity to manufacture the product in a cheap retort of large capacity operating under conditions that make for long life, and the production of a coke that can be briquetted without difficulty.

Conservation Has Already Shown Results

In discussing fuel conservation Dr. Horace C. Porter said, "During the last ten years in America, steel production has increased 60 per cent, railroad traffic has doubled, the automobile industry has multiplied itself ten times, while the population of the country has increased by only 15.2 per cent. In spite of the vastly increased industrialization thus shown, and of a much

higher present standard of living, coal consumption per capita has remained practically stationary, and the consumption of all fuels has increased by a mere 7½ per cent.

"In other words,much progress has been made in fuel economy and there has been a considerable increase in the return from a ton of coal. If this had not been so the present coal shortage would have been much greater than it now is, and our industrial development would necessarily have been restricted accordingly.

"Much coal, however, is still wasted. To make the fuel shortage still less a menace both now and in the future additional fuel conservation should be practiced. Some economy is realizable with little delay, while other forms, accomplishing more, will take time and large outlay.

"In the first class come increased boiler-furnace economy, with careful regulation of flue-gas temperatures and excess air and greater use of economizers, superheaters and feed-water heaters, the application of powdered coal and gas to industrial heating furnaces as in steel and metal-working plants, and the increased use of waste-heat boilers.

Electrified Roads to Save 120,000,000 Tons

"In the second class are many major improvements whereby immense fuel saving is ultimately possible; for example, the electrification of steam railroads, which if completely accomplished in this country would save 120,000,000 tons of coal per year. A centralization of power development in 'super-stations' is possible, either water power being used or large steam turbo-generators, by which system, if developed to the furthest extent of its application, at least one-third less coal would be required per unit of power sent out than is now used in the average small station which these super-stations would replace.

"A large saving in fuel, notably in oil, will come from the inevitable introduction of the heat standard for gas, especially if a low enough standard is set to permit of the highest thermal efficiency in its manufacture and use. Byproduct coking to replace the non-recovery coke-making still practiced in this country would save over 8,000,000 tons of coal per year, besides valuable byproducts.

"It is to be hoped that a gradual extension of these fuel-saving enterprises will reduce the ratio between our fuel consumption and our industrial output, and that as a result the apprehended fuel shortage will be avoided and a lowering of price assured." Dr. C. A. Sheppard then described those blends of oil and coal dust which are termed "colloidal fuel."

"Colloidal fuel," said Dr. Sheppard, "is a name given to a distinct class of liquid to semi-liquid blended fuels. They were developed in this country during and subsequent to the last two years of the Great War. They are composites in which finely divided carbonaceous solids or semi-solids—various kinds of coal—are so suspended in and blended with liquid fuel oils as to form readily stable and atomizing fuels. They have been developed for burning with the regular types of atomizing burners using ordinary fuel oils, but also have possibilities for use in internal-combustion engines of the Diesel and semi-Diesel type.

"The machinery for compounding these fuels is simple; it consists of a suitable mill for pulverizing coal, coke, etc.; storage and blending tanks for the oil bases, and mixing kettles for compounding the composite fuel. Little modification in existing types of machinery is necessary, and the process is readily made continuous. The cost of manufacture may be reckoned at approximately $1.50 per ton, inclusive of the fixateur —a substance used in small quantity to stabilize the colloidal fuel.

"The following is a brief summary of the properties of colloidal fuels. They are liquids which are handled and atomized for combustion like fuel oils. They contain more heat units per gallon than such oils and also little moisture and ash. The temperature at which they take fire—the flash point—is above 200 deg. F. They are immune from spontaneous combustion.

"Not only are they vaporless up to high temperatures, thus avoiding explosive mixtures with air, but they may be fireproofed by a 'water seal' of an inch or more of water, owing to the fact that they are heavier than that liquid. For this reason also they will sink if spilled blazing on the surface of water—that is, they are self-quenching. The fire risk in their use is as low as with anthracite coal, and far less than with bituminous or ordinary fuel oil. They are the most compact fuels known. The advantages of this quality are quite obvious: Increased radius for ships and lessened storage space in crowded cities."

The report by Alfred R. Powell discussed the factors which determine the amount of the sulphur which will be found in the coke and gas produced by the carbonization of bituminous coals. He pointed out the significance of the different sulphur compounds in the coal upon the distribution of the sulphur in the products.

Relation of Pyritic to Organic Sulphur

A report on a similar subject was presented by H. F. Yancey and Thomas Fraser entitled "The Distribution of the Forms of Sulphur in the Coal Bed." In this paper the relative quantities of pyritic and organic sulphur in coal were discussed as follows:

"A study has been made of the quantitative distribution of pyritic and organic sulphur in the various sections or bunches of a coal seam. About 120 samples were collected at twenty working places in three mines, one operating in the No. 6 seam in southern Illinois, one in No. 9 and the other in the No. 12 bed of western Kentucky.

"At each face the seam was divided into from four to eight benches and was represented by a corresponding number of samples. Some of these were taken at places in the bed which showed the coal intergrown and interbedded with lenses, bads and cat-faces of pyrite. The purpose of the work was to determine if any relation exists between pyritic and organic sulphur, and where segregations or concentrations of organic sulphur were found to exist to ascertain whether their occurrence was associated with other impurities or any specific recognizable conditions.

"The data obtained indicate no definite and absolute relationship between the amount of pyritic and organic sulphur in a given bed or sample. A majority of the samples taken at five faces in one mine indicate that an increase in pyritic sulphur is accompanied by a decrease in organic sulphur. This is not uniformly true, and the data do not warrant any such generalization. It may be said, however, that high pyritic sulphur and visible segregations of iron pyrite are not indicative of a high organic-sulphur content."

The Labor Situation

Edited by
R. Dawson Hall

Somerset Gets Standard Wage Increase

TO ACCORD with the advance given the daymen in the Central Competitive region the Somerset County Coal Operators' Association, of Pennsylvania, has agreed to increase the wages of all first-class day laborers in and about the mines $1.50 a day, and trapper boys and men who can do less than a full day's work, 82c. a day, the new scale to date from Aug. 16. Most of Somerset county is non-union.

Ousted Sub-District President Appeals to International Board of Union

H. E. PETERS, who was ousted as president of Sub-District 4 of District 17 (West Virginia) by the district board of District 17, has appealed from the decision to the international officers at Indianapolis. Charges were preferred against Peters by President Keeney of District 17. Just what the charges against Peters were has never been clearly made known. It was a foregone conclusion, however, that the district board would oust Peters, as it is dominated by Keeney.

Would Close Indefinitely to End Frequent Unauthorized Strikes of Union Miners

TWO mine workers at the mine of the Stirling Coal Co. Daniel Boone, Ky., were ringleaders in an unauthorized strike for an increase in pay above that provided in the contract; when the men went back to work the company laid off these men as having been leaders in a breach of contract. This caused another unauthorized strike on Sept. 3, when 125 mine workers went on "vacation." Paul G. Gannon, in charge of the mine operation, has announced that the men will not be re-employed and that the mines will be closed down until the men decide to return to work and perhaps may be closed indefinitely.

Standard Wage Increase Made Effective in Three Large West Virginia Fields

UNDER the agreement reached by representatives of the Northern West Virginia Coal Operators' Association and by representatives of District 17, United Mine Workers, in a meeting at Baltimore the wages of all daymen in the mines of the territory in the Northern West Virginia Coal Operators' Association have been increased, from Aug. 16, $1.50 per day and the wages of boys not paid men's wages at the rate of 82c. per day. This gives the daymen and monthly men in twelve and a half counties in northern West Virginia the benefit of the increase.

The change is in accordance with the amendment to the scale contract in the Central Competitive region. The conference at Baltimore at which the change was discussed and finally agreed upon lasted two days. The agreement was reached by Brooks Fleming, Jr., president of the Northern West Virginia Association, and by George E. Brackett, of Grafton, representing the operators, and by C. F. Keeney, president of District 17, and Charles H. Bateley, international representative, representing the mine workers.

The same rate of increase was granted in that part of District 17 embraced in the Kanawha field, including Big Coal River and Cabin Creek district, at a meeting of the scale committees of the operators and miners held in Charleston during the week ending Sept. 11. The increase dates from Aug. 16. It required little time to reach an agreement. Some of the operators objected to making the increase effective from Aug. 16 in view of the fact that their payrolls had been made up for the last half of August.

When the scale committee of the miners and operators of the New River Operators' Association met on Sept. 13 they likewise entered into an agreement the terms of which were in the matter of wage to adult daymen and boys the same as those just stated, the increase being retroactive also to Aug. 16. Following the meeting of the joint scale committee a meeting of the joint grievance committee was held, at which a number of matters were considered.

Union Driver Seeking Two Hours' Extra Pay Closes Mine in West Virginia

MINERS at the Galloway mine in Taylor County were on strike early this month. This strike grew out of the demand of a driver for two hours' extra pay each day for driving in a wet place. When he was offered an opportunity to drive in a dry place he refused to accept the change but clung to his demand for the two hours' extra pay. The company declined, however, to allow him the extra pay, pointing out that it would be in violation of the scale contract. Following the company's refusal to grant the extra pay to the driver, the entire force at the Galloway mine ceased work. There is a provision in the general wage agreement for settlement by joint board action of such cases as caused the trouble at Galloway.

Operators to Make Prompt Payment of Back Money to Mine Employees

WITH reference to the retroactive feature of the award of the Anthracite Coal Commission, at a meeting of the Joint Scale Committee of Anthracite Operators and Mine Workers held Sept. 2, 1920, the following resolution was adopted:

"Resolved that the back money shall be paid in one payment as soon as possible, but in no event shall the payment be deferred beyond Oct. 16, 1920."

Morgantown & Kingwood Strike Steadily Loses Ground; Many Are Evicted

UNION activity appears wholly unable to keep the strike along the Morgantown & Kingwood Ry. in northern West Virginia from coming to an end although not a point has been gained. This is shown by the fact that the Penn-Mary Coal Co., against which the strike is principally directed, because of its refusal to yield to the demands of the United Mine Workers, is operating at 70 per cent of normal capacity. In fact the only mines of the Penn-Mary Coal Co. not in operation are the Richard No. 21 mine and the Kingwood No. 24 mine.

At Bretz the company has thirty-two men at work as compared with forty before the strike; at Sabraton the mine is short only six men as compared with the number at work on the day preceding the strike; at Masontown more men are at work than was the case on the day preceding the strike. The company has an average normal production of 1,800 tons a day. During the first few days of September the company instituted eviction proceedings against a number of striking miners at Kingwood who were still in possession of company houses, as they had been since July 11.

Not only has the Penn-Mary Coal Co. succeeded in operating despite the strike but the Connellsville Basin Coke Co. also is operating its mines on a basis of between 50 and 75 per cent of normal and expects soon to be operating to capacity. Steps are being taken by the company to evict miners who are still occupying company houses at Rock Forge, W. Va., although they have gone on strike and have accepted work elsewhere.

Despite Steady Work Texan Mine Workers Ask for Increased Pay

REPRESENTATIVES of the Texas coal miners and operators are in session in Fort Worth in an effort to negotiate a new wage scale and contract and to settle recent controversies. The miners are demanding an increase of $1.50 a day, which will bring the daily wage to $7.50, and it is believed that an agreement can be reached on this point without difficulty.

The representatives of the miners are George R. Sparling, of Gordon, a member of the union executive committee; Matt Rosatto, Ed Tidewell and Ed Autrey, of Thurber; W. W. Mumford and Tony Brazik of Strawn; Soren Anderson and Lee Smith of Lyra, and John Wilkinson, president of District 21, United Mine Workers of America. The mine owners are represented by Judge E. B. Ritchie of Strawn, attorney for the coal operators; Gomer Gower and Ed Britton of Thurber; W. H. John of Bridgeport; W. F. Nance of Newcastle, and W. K. Gordon, president of Thurber Coal Co.

The situation in Texas with regard to the wage scale, as viewed by the mine owners, was outlined by Judge Ritchie in these words:

"Following the awards of the Bituminous Coal Commission appointed by President Wilson last winter to investigate all phases of the coal industry and to determine what increases in the wage scale were necessary to the miners to meet the increased cost of living, the Texas conference of miners and operators, as in other fields, met in Fort Worth in April and entered into a two-year working agreement, making effective the increase awarded by the commission, the contract being for a period of two years, beginning April 1, 1920, and ending March 22, 1922.

"In the Texas mines, the increase at that time represented a net increase since 1913 and prior to the war of 111 per cent to all daymen working in and about the mines, and an increase of 89 per cent for those digging coal on a tonnage basis. For instance, mule drivers, motormen and other drawing $2.84 a day in 1913 are now drawing, according to the April agreement, $6 a day.

"While no formal demands have been made to the Texas operators that have been invited into this conference, it is assumed that the same demands will be made for increases in the Texas mines as have been granted in the Central Competitive Field and some states of the Southwest.

"While the Texas operators are willing that their employees be paid fair and even liberal wages, they believe that consideration should be given to the fact that the operators are working thin beds, which occasion much expense, and that the mine workers of Texas have steady work in the mines, faring indeed much better during the railroad car shortage than the mine workers in most other sections. The Texas operators can see no reason why the two-year contract so recently entered into should not be lived up to in good faith by both parties."

Shooting Is Outcome of Union Activity at Penn-Mary, near Morgantown

ABE MURRAY, a striking miner, shot and seriously wounded Scott Felton, aged 63, a former member of the West Virginia Legislature, who was employed as a guard by the Penn-Mary Coal Co. at its Richard mine on the Morgantown & Kingwood R.R., where there has been a strike for some time. Murray fired at Felton from a second-story window. Previous to the shooting of Felton, Murray, while under the influence of liquor, made the statement that he intended to shoot the first guard who came along.

Felton was walking down a road near Murray's house when the latter opened fire on him. Felton received the brunt of the charge of the shotgun in the right side of his face, fifteen No. 5 shot being removed by a physician from his face. Murray was arrested and held on a charge of felonious assault with intent to kill. Murray had been employed for a time as mine guard but yielded to strike propaganda and became a supporter of the strike. His discharge naturally followed.

Three Thousand Men in Northern Colorado File Notice of Strike with Commission

SEEKING recognition of the union, 3,000 men in northern Colorado are threatening to go on strike. They have been promised a new wage scale to date from Sept. 1 and this will be paid as soon as it is worked out.

A meeting was held at Erie, Col., at which men from the Boulder and Weld mines were in attendance. The miners want a 20 per cent increase for "dead work." There is no dispute about the pay of daymen. Everyone is agreed that the $1.50 per day additional wage will be allowed. In accord with the law the State Industrial Commission must receive thirty days' notice, and the mine workers on this occasion are complying with the legal provisions.

Suspension of Priority Improves National Coal Situation

East, Middle West and Northwest, Where Conditions Are Acute, Helped by Lifting of New England Order —Railroads Equal to Northwest's Needs

WITH the temporary suspension by the Interstate Commerce Commission of the New England priority order, which called for shipments of 1,250,000 tons of soft coal a month to tidewater for transshipment to New England ports, the entire soft-coal situation throughout the country is appreciably improved. Discontinuance of New England priority, which was ordered last week by the commission at the request of the New England Coal Committee, makes it possible for a substantial quantity of coal, released from tidewater shipments, to be diverted to other points in the East and in the Middle West. The National Coal Association states that this coal can be diverted without prejudice to the supply New England will need next winter.

Renewal of Priority Not Likely

Although the New England priority order is only temporarily suspended, every evidence is at hand to indicate that New England's demands for the remainder of the year will be met without further resort to preferential shipments. The estimated requirements for New England for the calender year of 1920 are 22,000,000 tons of soft coal. From Jan. 1 up to Sept. 11, 15,480,000 tons had been shipped into New England. Of this, 8,094,000 tons went all-rail and 7,386,000 tons by way of tidewater. It is expected that the remaining 6,520,000 tons needed to supply the 22,000,000 tons for the winter will be shipped into New England before the middle of December. The railroads have signified their ability to handle this tonnage in the ordinary way in tidewater and all-rail movements.

Evidence of how effectively the New England priority order worked is found in official figures submitted to the U. S. Geological Survey showing recent movements of coal for New England. Under the program agreed upon by the bituminous-coal operators and New England coal distributors early in July a movement of 2,000,000 tons of coal a month all-rail and through tidewater was set down. Of this, 1,250,000 was to go to tidewater and the balance all-rail. In July 2,573,000 tons of soft coal were shipped to New England, 1,566,000 all-rail and 1,007,000 through tidewater. In August 2,458,000 tons were shipped in the New England movement, of which 1,048,000 were dumped at tidewater and 1,410,000 went all-rail. The all-rail shipments are estimated from reports of the American Railroad Association on the number of cars moving through the Hudson River gateways.

The fact that New England had at the beginning of last week all the coal at disposal that could be immediately absorbed in the tidewater and all-rail movements was the factor that induced the New England Coal Committee to advise the Interstate Commerce Commission that the priority order was no longer necessary.

With the New England situation now admittedly so improved that special relief is no longer necessary, efforts are being redoubled by the operators, railroads and shippers to clear up the shortage in the Northwest, where the situation has been even more acute. While there has been a slight decrease in the last three weeks in the Great Lakes movement under Service Order No. 10, the railroads are endeavoring to make up the deficiency, with the announced expectation of fully meeting the requirements before the close of navigation, about Dec. 1. Up to last week the Lake movement for the year aggregated approximately 13,900,000 tons, out of a scheduled movement of approximately 24,000,000 tons. The remaining tonnage must be shipped before the lakes become unnavigable, entailing a movement of over 1,000,000 tons a week. This the railroads promise to accomplish.

Ample Nationwide Supply Assured

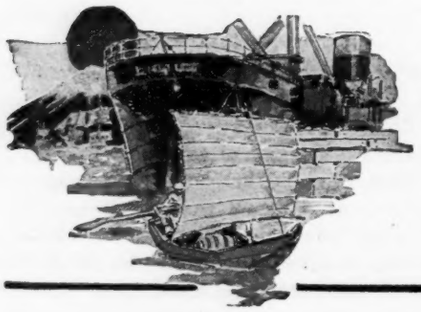
As soon as the Northwest program is cleared up ample coal will be released for the balance of the country, with every assurance that all the wants of the large and small consumers will be adequately met before winter sets in.

While public utilities commissions in Ohio, Indiana and Michigan have expressed concern as to the wants of householders in those states being filled before winter, it may be stated that there is no need for alarm. The Ohio situation recently was taken up by the bituminous-coal operators and the railroads in conjunction with the retail dealers of Ohio communities in direst need, and a program was developed to give an immediate supply of coal sufficient to last until the Great Lakes movement is out of the way. In the same way consumers in other states will be furnished with coal for immediate uses. Assurance is given by coal producers that householders need not feel it necessary to fill their bins with the entire winter's supply at this time. By taking only enough coal now to tide them over Dec. 1 the entire situation, it is promised, will work out with no great deprivation to anyone.

Bituminous Coal Loaded Into Vessels at Lake Ports as Dumped by Docks for Season to End of August

(In Net Tons)

Ports	Railroads	1920 Cargo	1920 Fuel	1920 Total	1919 Cargo	1919 Fuel	1919 Total	1918 Cargo	1918 Fuel	1918 Total
Toledo	Hocking Valley	1,811,256	34,760	1,846,016	2,984,508	84,205	3,068,713	2,801,425	82,015	2,883,440
	Toledo & Ohio Central	854,755	35,862	890,617	885,291	26,713	912,004	1,266,574	35,579	1,302,153
	Baltimore & Ohio	644,643	20,507	665,150	1,623,051	37,891	1,660,942	1,558,519	28,731	1,587,250
Sandusky	Pennsylvania	723,938	9,312	733,250	936,149	26,513	962,662	1,343,597	33,946	1,377,543
Huron	Wheeling & Lake Erie	1,123,653	61,928	1,185,581	1,063,902	34,409	1,098,311	1,293,953	47,605	1,341,558
Lorain	Baltimore & Ohio	1,723,662	131,549	1,855,211	1,961,786	103,710	2,065,496	1,791,676	52,494	1,844,170
Cleveland	Pennsylvania	445,663	80,582	526,245	1,598,451	163,919	1,762,370	1,493,807	185,607	1,679,414
	Erie	140,609	10,617	151,226	135,170	4,289	139,459	388,508	12,773	401,281
Fairport	Baltimore & Ohio				16,692	12,954	29,646	105,173	27,758	132,931
Ashtabula	New York Central	698,814	148,576	847,390	1,246,265	93,481	1,339,746	1,204,297	134,006	1,338,304
	Pennsylvania	820,404	55,126	875,530	1,260,910	57,258	1,318,168	778,520	50,526	829,046
Conneaut	Bessemer & Lake Erie	1,478,112	24,251	1,502,363	935,857	5,739	941,596	1,405,475	21,309	1,426,783
Erie	Pennsylvania—West	110,116	8,008	118,124	527,052	27,338	554,390	432,146	25,824	457,970
	Pennsylvania—East	86,901	47,039	133,940	145,472	9,328	154,800	248,035	5,953	253,988
Totals		10,662,526	668,117	11,330,643	15,320,556	687,747	16,008,303	16,111,705	744,126	16,855,831



Foreign Markets and Export News

Queensland's Coal Production

The annual report of the Queensland Department of Mines states that the total quantity of coal raised in Queensland last year was 931,631 tons, of a value of £614,307 (normally equal to $3,071,535), this being, as compared with the 1918 yield, a decrease of 51,562 tons in production, but an increase of £42,002 (normally equal to $210,010) in value. There were increases both in quantities and values on the Darling Downs, at Maryborough, Rockhampton and in the northern district, while Clermont recorded a lessened output, but a rise in values. There were forty-eight collieries in operation in Queensland, of which twenty-six were in the Ipswich district.

Reported Coal Output of Devastated Areas of France

Production of the coal mines of the Western Basin of the Pas-de-Calais for the months of June and July, after making allowance for wastage in sorting and washing, according to the Board of Trade Journal, amounted to 736,600 and 747,000 tons, respectively, made up as follows:

	July, Tons	June, Tons
Bruay	209,500	214,000
Noeux	169,000	164,000
Marles	168,900	162,000
Bethune	140,500	136,000
Ferfay	21,500	22,000
Ligny-le-Aire	14,200	14,500
Vendin-Lez-Bethune	15,000	14,000
Clarence	8,400	8,300

The production for July, therefore, shows an increase of 10,200 tons over the production for June, during which month there was an increase of production over the May figures of no less than 312,000 tons.

The production of the mines in the Department du Nord for the months of June and July was 146,010 and 176,154 tons respectively, after making allowance for consumption at the mines and for loss by sorting and washing. The amount given was made up as follows:

	July, Tons	June, Tons
Aniche	50,872	35,504
Anzin	82,030	70,990
Azincourt	814	275
Crespin	3,350	2,341
Douchy	6,717	6,924
l'Escarpelle	692	26
Thivencelles	3,991	4,408
Vicoigne	2,344	1,915
Dourges	3,579	3,600
Ostricourt	21,771	19,818

The work of restoring the mines at Lens is being actively pushed forward, and it is thought that it may be possible to turn out a few tons in the very near future from a small seam which was recently cut into during the work of reopening the pits.

The following figures are an estimate of the future production of the mines in the Department du Nord, which, given an adequate supply of labor and an absence of strikes, it is confidently believed will be actually attained in thousands of tons:

	1920	1922	1924	1925	1913
Anzin	1,500	3,000	3,800	4,000	3,042
Crespin	45	90	100	120	73
Thivencelles	90	150	250	250	177
Vicoigne	18	65	120	120	98
Douchy	90	350	450	500	365
Azincourt	15	60	100	120	90
Aniche	615	2,060	2,810	2,915	2,093
Elines-les-Raches	...	10	40	80	124
Escarpelle	50	420	560	630	750

The production of these mines in 1913 is given for purposes of comparison.

Europe Seeks Coal in the Orient; Japanese Market Dull

According to the coal market report of Wheelock & Co. issued at Shanghai Aug. 12 there was very little business done in the Japanese coal market during the preceding fortnight and on account of the high price of coal in Japan the silk Filatures have been more or less obliged to fall back on native coal. The coal market in Japan is rather dull, as is usual at this season of the year, and mine-owners are inclined to reduce the output for the time being owing to the general depression in trade existing.

There are numerous deals in Fushun coal under consideration and a fairly large business is expected to result in the near future.

Since the previous report rumors have been persistent of large quantities of Chinese coals having been sold for delivery in Europe, but so far it has not been possible to confirm the same, although one shipload of about 7,000 tons has been actually shipped to Denmark. It is realized that coal is urgently needed in Europe, owing to the restrictions placed on the export by the British and American governments, but it is doubtful if China can spare coal in anything like the large quantities which are now being inquired for.

Owing to the improved political situation in the North, shipments of Kaiping coal are more frequent, consequently deliveries have resumed normal conditions. Stocks are below the average and the market for better grades shows a decidedly firmer tendency.

A cargo of about 1,500 tons of Cardiff coal (Admiralty list) has just been landed at Shanghai. This is the first cargo to arrive since the outbreak of the Great War, but it is not for sale on the open market, having been imported for the use of the British government.

Coal prices are quoted as follows:

JAPAN COAL

Miike lump	ex wharf	Contracted for
Miike small	ex wharf	
Miike dust	ex wharf	
		Taels
Kishima lump	ex wharf	14.00
Kishima dust	ex wharf—no stock	10.00
Shakano lump	ex wharf	13.00
Arate lump	ex wharf	12.00
Shimoyamada Kirigomi	ex wharf	11.00
Shin Shakano	ex wharf	11.00
Yoshinotani No. 1 lump	ex wharf	12.00
Yoshinotani No. 2 lump	ex wharf	10.00

KAIPING COAL

	Taels per Ton ex Wharf
No. 2 lump	13.50
Washed nuts	13.50
Washed slack	10.50
No. 1 slack	9.00
No. 2 slack	8.50

Freight Rates to European and South American Ports Easier

W. W. Battie & Co.'s coal trade freight report announces the chartering of numerous steamers to carry coal to European and to South American ports. Freight rates to these destinations are easier. The West Indian situation is unchanged.

Freight rates by steamer are as follows:

Destination	Rate		Tons Discharged Daily
Malmo	About 15.00	—	1,000
Copenhagen	About 15.00	—	1,000
Stockholm	About 15.50	—	800
Gothenburg	About 15.00	—	1,000
Antwerp/Rotterdam	About 12.50	—	1,000
Hamburg	About 14.50	—	1,000
French Atlantic ex Rouen	13.00/13.50	—	700
Algiers	15.00/15.50	—	800
West Italy	About 15.00	—	1,000
Marseilles	About 15.00	—	1,000
Piraeus	About 16.50	—	1,000
Trieste/Venice	About 16.00	—	1,000
Port Said	16.00/16.50	—	1,000
Constantinople	17.00/17.50	—	500
Gibraltar	About 14.50	—	1,000
Pernambuco	About 14.50	—	500
Bahia	About 14.50	—	500
Rio	About 14.50	—	1,000
Santos	About 15.50	—	600
Buenos Aires or Montevideo or La Plata	14.00/14.50	—	750
Para	14.00/14.50	—	500
Rosario	About 15.00	—	750
To Nitrate Range	12.00/13.00	—	750
Havana	About 6.50	—	500
Sagua or Cardenas	7.50/ 8.00	—	300
Cienfuegos	7.50/ 8.00	—	500
Caibarien	7.50/ 8.00	—	300
Guantanamo	7.50/ 8.00	—	500
Manzanillo	About 9.00	—	300
Bermuda	About 7.00	—	300
Bermuda p. c. and dis. free			
Kingston	About 8.50	—	400
Barbados	9.50/10.00	—	500
St. Lucia	9.50/10.00	—	500
Santiago	7.00/ 7.50	—	500
Port of Spain, Trin	9.50/10.00	—	500
Curacao	About 10.00	—	500
Free p. c. Curacao			
Demerara	About 13.00	—	400
St. Thomas	8.50/ 9.00	—	500

All above rates gross from charter.

News from the Capital

By Paul Wooton

Chile Seeks 50,000 Tons of American Coal for Navy Use

AMBASSADOR MATHIEU of Chile has taken up with Chairman Benson of the Shipping Board the matter of transporting in American Government-owned merchant ships 50,000 tons of coal for the use of the Chilean Navy.

Operators Say That High Production Costs Justify $5 Mine Price in Kentucky

THE Department of Justice is in receipt of a copy of the findings of a special Federal grand jury in Covington, Ky., which holds that prices in excess of $4.50 to $5 a ton for bituminous coal at the mines are unreasonably high. In justification of the $5 limit it was said that production costs are higher in the field under investigation by this grand jury than in other fields.

Wholesale Association Engages Counsel in Profiteering Inquiry

STANCHFIELD & LEVY, a New York legal firm, has been retained to represent the American Wholesale Coal Association before the Department of Justice in matters pertaining to profiteering.

American Coal Association Intervenes in Reconsignment Case

THE American Wholesale Coal Association, having elected to intervene in the case brought by the Omaha Chamber of Commerce attacking the reconsignment order, has retained William A. Glasgow, Jr., of Philadelphia, as counsel. The case will be argued before the Interstate Commerce Commission about the middle of October.

Assigned-Car Demand Increases Despite New Public Utilities Order

THE new public-utilities order seems to have been ineffectual in stopping a rapid increase in the number of assigned cars being demanded under that order. The new order was expected to make a pronounced decrease in the amount of coal being moved in assigned cars for public utilities. Instead, the number of cars being demanded by the public utilities has continued to increase rapidly. With the cars being used for railroad fuel and for Lake orders there are few left for commercial coal in the district furnishing Lake coal. Assigned cars also give the public utilities a splendid weapon to use on prices. On the other hand, the operators, to obtain the advantages which come from plentiful car supply, are inclining more and more to take utilities contracts at a shaded price.

The situation has been further aggravated by the new wagon-mine order, which has imposed an important draft on car supply at a critical time. The National Coal Association is urging its members to watch carefully for violations of the wagon-mine order and abuse of the public-utility order. The fault is said to lie with the difficulty of policing the orders. The Interstate Commerce Commission is cognizant of the situation and predictions are being made that modifications will be forthcoming soon.

A development in the Northwestern situation is the fact that nearly all the coal moving now has to be bargained for at lower Lake ports. Apparently there was nothing like the amount of coal under contract that the Northwest had represented. It also is stated that operators are not shipping to the Lakes more than their quota which may be under contract. When the order was issued there was a tentative understanding that shipments were to be made to the full amount called for in Northwestern contracts even if the quota should be lower than the contract amount.

Smokeless Exports Not Likely to Increase With Lifting of New England Order

SUSPENSION of the New England order has given rise to predictions that a large proportion of the smokeless coal will now be exported. There is no justification for this conclusion, it is stated at the Washington office of the Smokeless Coal Operators' Association, as the bulk of the coal produced in the smokeless fields is under contract. It was stated that the smokeless operators never were stampeded by the high prices and that no contract coal has been sold at spot prices, despite the fact that contract prices frequently have been $10 under the spot market. The unvarying policy of the smokeless operators, it is explained, is to take care of those sections of the United States which are dependent upon it for coal. New England contracts will be scrupulously filled, regardless of the offers which may be made by foreign buyers.

Every effort has been made by the smokeless operators to take care of the State of Virginia, it was pointed out. Since the formation of the Emergency Coal Committee, under the chairmanship of Oscar M. Deyerle, the 350 cars of emergency coal requested by the committee have been furnished.

Railroad Relations Committee Meets

THE Railroad Relations Committee of the National Coal Association held its regular meeting in Washington Sept. 29.

Survey Geologist Studies Virginia Coal

DAVID WHITE, the chief geologist of the U. S. Geological Survey, is conducting a series of paleontologic investigations on the coals in the Big Stone Gap region of Virginia.

National Coal Officials Confer with Western Associations

COLONEL D. B. WENTZ, president of the National Coal Association, and J. D. A. Morrow, vice-president, are now on a western trip. They were in Kansas City on Sept. 27 and in Denver on Sept. 28 and 29. They have been in conference with several of the Western coal associations.

Shipping Board Pays $9.30 for Coal Which The Navy Gets for $6.80

THE Shipping Board is not at all pleased with the situation at Hampton Roads which makes it necessary for it to pay $9.30 for smokeless coal, while the navy gets the pick of that coal for $6.80 a ton. Secretary Daniels fixed $4 as the price for navy coal at the mines, which results in a cost at Hampton Roads of $6.80. The Shipping Board's contract originally was for $8.25 delivered at Hampton Roads. The contract was contingent on freight rates, however, and since Aug. 6 it has been forced to pay $9.30.

Illinois and Indiana Coal Now Helping Solve Northwest's Fuel Problem

THAT unusually large quantities of Illinois and Indiana coal are moving into the Northwest is reported to the Interstate Commerce Commission. It is stated that these coals are going into the iron ranges in Minnesota for the first time in history and that Illinois coal is being stored on upper Lake docks, which also has never happened before. Despite the movement of Middle Western coal into the Northwest, the commission seems to be of the opinion that it is not sufficient to offset the loss of movement in Lake coal prior to the issuance of Service Order No. 10.

West Virginia Operations Surrender Books In Price Investigation

DEPARTMENT of Justice activities in following clues, real and imaginary, in the matter of coal profiteering are proceeding with unabated vigor. A considerable proportion of recent callers at the Department of Justice are said to be coal men who have been making personal visits to department officials to set forth their side of the situation.

Two hundred and five West Virginia bituminous coal operators accused of profiteering to the extent of from $1 to $10 per ton, have surrendered to the Department of Justice and agreed to open their books.

When the allegations were first made the operators defied the Government. They changed their minds, however, when about to be summoned before a grand jury.

New England Priority Suspended

ACUTE shortage of coal in the Northeastern section of the country having been to a great extent mitigated by shippers and carriers under Service Order No. 11, the New England Coal Committee requested suspension of the New England priority order. Accordingly on Sept. 17 the Interstate Commerce Commission temporarily lifted the order by the issuance of the following:

It appearing that the emergency which caused the commission on the 26th day of July, A.D., 1920, to make and enter its Service Order No. 11 has been measurably relieved:

It is ordered that the operation of said Service Order No. 11 be, and the same is hereby, suspended until the further order of the commission.

It is further ordered that copies hereof be served upon the carriers upon whom Service Order No. 11 was served and that notice hereof be given to the general public by depositing a copy of this order in the office of the secretary of this commission.

Fuel-Inspection Work of Bureau of Mines Promises to Expand

IT IS probable that the fuel inspection work being done by the Bureau of Mines will be expanded during the next fiscal year. The demand for fuel inspection, along the lines of government inspection of grains, cotton and other agricultural products, is becoming more widespread. There is evidence that coal operators are viewing Government fuel inspection with much less aversion than has been the case heretofore.

Tidewater Movement of Coal During August Establishes a Record

TIDEWATER movement of coal during August, 1920, established a new record. The total dumped at the four North Atlantic ports and Charleston is reported to the Geological Survey by the Tidewater Bituminous Coal Statistical Bureau as 5,352,000 net tons, an increase over July, hitherto the maximum, of 437,000 tons. Shipments of cargo coal to New England increased slightly, amounting to 1,048,000 tons. There was a marked increase in the local tonnage at the ports and in that for coastwise destinations other than New England. Exports rose to a new record, 2,295,000 net tons.

TIDEWATER BITUMINOUS COAL SHIPMENTS FOR AUGUST, 1920 BY PORTS

(In Net Tons)

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total Dumped
Coastwise to New England	337,000	38,000	115,000	558,000	.....	1,048,000
Exports	.....	321,000	557,000	1,347,000	70,000	2,295,000
Bunker	354,000	53,000	83,000	295,000	8,000	793,000
Inside capes	.....	190,000	107,000	26,000	.....	323,000
Other tonnage	832,000	.....	.....	57,000	4,000	893,000
Totals	1,523,000	602,000	862,000	2,283,000	82,000	5,352,000

The destination of coal dumped at tide during the two weeks Aug. 29-Sept 12 is shown in the following table. Shipments to New England were 309,000 net tons in the week ending Sept. 4, and 261,000 tons the following week.

TIDEWATER BITUMINOUS COAL SHIPMENTS, AUG. 29—SEPT. 12, 1920 (a)

(In Net Tons)

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total Dumped
Aug. 29-Sept. 4:						
Coastwise to New England	106,000	16,000	48,000	139,000	.....	309,000
Exports	.....	117,000	58,000	281,000	13,000	469,000
Bunker	109,000	12,000	8,000	60,000	3,000	192,000
Inside capes	.....	38,000	31,000	6,000	.....	75,000
Other tonnage	184,000	.....	.....	3,000	2,000	189,000
Totals	399,000	183,000	145,000	489,000	18,000	1,234,000
Sept. 5-12						
Coastwise to New England	111,000	14,000	38,000	98,000	.....	261,000
Exports	.....	81,000	112,000	237,000	9,000	439,000
Bunker	126,000	13,000	12,000	54,000	2,000	207,000
Inside capes	.....	48,000	28,000	5,000	1,000	82,000
Other tonnage	188,000	4,000	.....	11,000	.....	203,000
Totals	425,000	160,000	190,000	405,000	12,000	1,192,000

(a) As reported to the Geological Survey by the Tidewater Coal Statistical Bureau.

Jobbers, Wholesalers and Retailers To Be Heard in Indiana Price Fixing

INDIANA'S Coal and Food Commission announced a second hearing in connection with the fixing of coal prices, for coal jobbers and wholesalers, would be held Sept. 29 at 9 a.m. The third hearing, for retailers, has been called for Oct. 1. Operators' prices and problems were considered at the first hearing, Sept. 27. The commission is empowered to fix prices only on coal produced in the State of Indiana.

Despite High Prices Canadian Coal-Supply Situation Gives No Cause For Alarm

Imports From the United States Continue Close to the Average of Former Years—Anthracite Totals Gain, While Bituminous Figures Decrease—Dominion Monthly Coal-Supply Bulletin To Be Issued

By S. J. Cook*

DESPITE much loose talk to the contrary, the Canadian coal-supply situation does not appear alarming, although prices continue high and no immediate relief may be expected. The production of bituminous coal in the United States during the 199 working days ending Aug. 21, 1920, and for the corresponding periods in preceding years, according to figures supplied by the U. S. Geological Survey, was as follows (in net tons): 1917, 352,011,000; 1918, 375,-395,000; 1919, 287,270,000; 1920, 335,967,000.

The year 1920, therefore, at Aug. 21, was 16,000,000 tons behind 1917 and about 39,500,000 tons behind 1918, but was 48,666,000 tons ahead of 1919. In this connection it is pointed out that production during 1918 exceeded consumption and provided for a net addition to consumers' stocks by the end of the year of approximately 30,000,000 tons. In 1919 the condition was reversed; consumption exceeded production and there was a net draft on stocks of perhaps 40,000,000 tons for the year.

United States production of anthracite showed an output of 55,712,000 net tons for the calendar year up to Aug. 21, 1920, compared with 52,678,000 for the same period during the preceding year.

Coal Imported from the United States

During the last five years Canada has imported from the United States bituminous coal in quantities varying from 9,000,000 tons in 1915 to 17,250,000 tons in 1918. Anthracite imports varied during the same years from 4,000,000 to 5,333,000 tons.

Central Ontario had received up to June 30, 1920, 99 per cent of the average amount of anthracite coal received during the corresponding six months in the three preceding years and 106 per cent of the amount of anthracite received during the same period in 1919. The bituminous coal supply is not as good. Receipts this year constitute only 89 per cent of the average amount for the corresponding six months of the three-year period, but when taken against last year's receipts 1920 shows an increase of 9 per cent over 1919. Quebec has received this year 110 per cent of the average amount of anthracite obtained during the same six months' period of three years preceding and 119 per cent of the amount brought in during the first six months of 1919. Receipts of bituminous are lower, the 1920 figures being 65 per cent of the three-years' average and 74 per cent of 1919 imports.

Total coal imports for Canada show that this year's receipts of anthracite to June 30 are 101 per cent of the three-years' average and 107 per cent of last year's receipts during a similar period. Bituminous coal imports into Canada up to June 30 have fallen this year to 80 per cent of the average for the same period during the three preceding years, but they still add up to 97 per cent of the receipts during the first six months of last year.

These data will serve to inform the reader that while there is undoubtedly a shortage of coal it is not such as to cause undue alarm. There seems no reason why United States production should not continue on the same scale as at present, and with the return of the United States railways to private control, transportation facilities probably will be considerably augmented, so that the losses due to car shortage may be reduced, and the consequently increased distribution will make for general relief.

Canadians never will be content to be absolutely dependent on the United States coal miner, hence a policy looking to the better development of Canada's coal fields would be acclaimed by both miners and consumers. Co-ordination of effort with the elimination of obsolete methods and unnecessary local competition in Canadian coal-mining districts would do much toward Canada's coal problem. But governments, capitalists and miners have all much progress yet to make before the necessary spirit of unity will be found pervading all.

Canadian Coal Output Increases

Coal mining in Canada has been subject to many vicissitudes and yet, in spite of all, the output from Canadian mines during the first three months of the present year was nearly half a million tons in excess of the output during the same three months of 1919, and if production is maintained at the same rate during the remainder of the year, the Canadian output in 1920 will exceed that of 1913, which so far holds the record at 15,500,000 tons.

Canadian output figures are given below for the years 1913-1919 inclusive, and for the three years 1917-18-19

CANADIAN OUTPUT OF COAL

1913	15,532,878	1915	13,480,196
1914	13,988,743	1916	14,815,703

	1917	1918	1919
Nova Scotia	6,345,335	5,836,370	5,790,196
New Brunswick	189,668	266,565	166,377
Saskatchewan	360,623	348,988	379,347
Alberta	4,873,637	6,126,443	4,950,310
British Columbia	2,660,834	2,879,099	2,549,516
Yukon	5,264	2,900	.....
Canada	14,435,361	15,460,385	13,935,745

Production in January, February and March

	1919	1920
Nova Scotia	1,448,588	1,591,170
New Brunswick	52,813	32,444
Saskatchewan	80,837	93,563
Alberta	1,416,578	1,732,330
British Columbia	736,748	*675,016
Canada	3,735,564	4,126,523

*Incomplete

*Chief of the Mining, Metallurgical and Chemical Division, Dominion Bureau of Statistics.

the output of each coal-producing province is recorded. Comparative figures for the first three months of the current year and last year also are given. All quantities are given in short tons.

To meet the very evident need for data regarding output, exports, imports, and movements of coal, and in order that the general public may be kept accurately informed regarding Canada's coal supply, it is proposed to issue from the Mining, Metallurgical and Chemical Division of the Dominion Bureau of Statistics a "Coal-Supply Bulletin" each month, giving all the available statistics relating to the production and disposition of Canadian coal, and the importation and distribution in Canada of coal from the United States. Owing, however, to the present extremely high costs of printing, issuance of the first number of this bulletin, which it was proposed to publish at this time, has been postponed as changes are now being made in the multigraph equipment of the bureau, which, when completed, will permit of the printing promptly and at greatly reduced cost of such publications as the one proposed.

During the recent administration of fuel control in Canada under C. A. Macgrath the necessity of maintaining accurate records of all data relating to coal production in this country and imports from the United Sattes in readily available tabular form was so emphasized that the principal records inaugurated under that régime were merged with those previously compiled in the Dominion Bureau of Statistics, and when the Mining Division of the Bureau was established last year, under my charge, the collection of adequate records of coal supply was one of the first matters given attention. The whole of this work is now on a permanent basis, and the several Government departments interested are being served through the co-ordination of provincial and dominion effort made possible by the bureau. Therefore the "Coal-Supply Bulletin," compiled each month from the wealth of data available in the Mining, Metallurgical and Chemical Division of the bureau, will provide a new service to the public, and will enable the bureau to keep its many correspondents on the subject of coal promptly and fully informed on the subject. The critical surveys made from time to time will serve to review and interpret the data recorded.

Data Collated by Co-operative Effort

Output and disposition of coal figures are obtained in the bureau through the co-operative assistance of the several provincial departments administering the mining laws in the coal-producing provinces. This scheme, inaugurated in January, 1920, provides for the collection of production data from the mine operators by provincial officers, thus insuring the highest degree of reliability in the data collected. Returns are obtained in duplicate, and one copy, after visé by the provincial officers, is forwarded to Ottawa for compilation, with the data from the other provinces, by the trained staff of the Mining Division. This plan has resulted favorably, not the least of the advantages gained going to the mine operator, who now completes one form each month, knowing that he will not be required to do the same work over several times more for other Government departments. The present arrangements are working so smoothly and well that the "Coal-Supply Bulletin" will contain complete output figures for the month preceding its date of publication.

Imports of coal into Canada, and exports therefrom, are supplied to the bureau twice a month through the courtesy of the Department of Customs. These figures are absolutely up to date and all coal coming into Canada from the United States is shown by quantities and kinds for each port of entry. Exports of coal produced in Canada also are shown by quantities shipped through each port of exit.

These data, with the production figures obtained through the provinces, enable the bureau to survey the coal situation continually, and to determine with facility when a fuel famine threatens. All the information thus collected is carefully compiled and tabulated, and digests are prepared for the various administrative offices, including more particularly the Railway Commission.

A mailing list is being prepared and those who wish to have the "Coal-Supply Bulletin" forwarded to them regularly free of charge should send in their names and postal addresses at once to the Chief of the Mining, Metallurgical and Chemical Division, Dominion Bureau of Statistics, Ottawa.

Federal Courts in West Virginia to Sift Profiteering Charges

At the September term of the Federal Court for the southern district of West Virginia at Huntington an effort will be made to begin the trial of cases against fifty-seven coal companies in southern West Virginia against whom charges under the Lever Act of profiteering in the sale of coal have been preferred by the Department of Justice. E. Lowery Hume, a special assistant Attorney General, who was at one time U. S. Attorney at Pittsburgh, has been retained to assist U. S. Attorney L. H. Kelly in the trial of the cases.

Up until about Sept. 1 all but about twenty companies, warrants for which had been issued, had answered to such warrants without service, but the twenty companies mentioned were somewhat slow in making arrangements for their appearance at court. Should there be a failure on the part of some of the companies to make arrangements for their appearance warrants will be served, of course.

A statement bearing upon the subject was given out by the United States Marshal in which he said: "Owing to the short period of time between now and the convening of court at Huntington on Sept. 21 and the additional work entailed by the approach of a term of court this office would be glad to have all the coal companies and operators who have not already arranged and given their bonds or had hearings before the U. S. Commissioner to come in at once and arrange these matters. By doing so they will avoid the necessity of sending a deputy marshal to serve the papers which are now in my hands." No such actions, it is believed, will be necessary, however.

Contrary to the method followed in southern West Virginia approximately 150 coal operators will be asked to appear before the grand jury of the Federal Court for the northern district of West Virginia at Martinsburg at the September term to tell what they know as to prices in northern West Virginia. Subpoenas for 150 operators either have been or will be served by the U. S. Marshal's office, such subpoenas having come from the office of U. S. Attorney S. W. Walker at Martinsburg. Operators affected are those having mines for the most part in Monongalia, Preston, Marion, Taylor and Harrison counties.

Issuance of the subpoenas for so many northern West Virginia operators no doubt was the outcome of a perusal of an investigation which has been made by the agents of the Department of Justice who have been engaged for some time in the northern part of the state in making an investigation of coal prices, coal costs, etc. Agents of the department were afforded full opportunity to examine the books of companies and all other data available.

The action taken in northern West Virginia differs from that taken in southern West Virginia in that in southern West Virginia companies and operators have been haled into court not upon the presentment of any grand jury but upon information furnished by the U. S. Attorney.

* * *

Late advices are that the Grand Jury investigation of coal operators of Northern West Virginia, which was to have been conducted at Martinsburg this week, is to be held in abeyance. It was stated at the Department of Justice after the conference Sept. 24 between a committee of coal operators and Henry S. Mitchell, assistant to the Attorney General, and U. S. Attorney Walker of the Martinsburg district. The official statement made in this connection by the Department of Justice is as follows:

U. S. Attorney Walker and Acting Assistant to the Attorney General Mitchell have received and considered the resolutions adopted at the meeting of coal operators of northern West Virginia held at the Fairmont Hotel, Fairmont, W. Va., on Wednesday, Sept. 22, 1920, presented in person by a committee of the operators together with the statement of counsel for the committee that the operators may be expected to co-operate in voluntarily furnishing information desired by the U. S. Attorney concerning prices charged for bituminous coal in the northern district of West Virginia, together with the request that the subpoenas outstanding against the operators to produce books and documents before the grand jury at Martinsburg, W. Va., on and after Monday next be temporarily suspended.

The numerous outstanding subpoenas were necessitated by reason of previous refusals to permit an inspection of books and documents desired by the U. S. Attorney. In view of the present disposition of the operators to furnish the desired information voluntarily, the U. S. Attorney will suspend the outstanding subpoenas pending his further consideration of the subject and inspection of the documents to be furnished.

The U. S. Attorney will resume proceedings before the grand jury as soon as he considers advisable, with a view to taking any action which may be necessary under the Lever Act with reference to the prices of bituminous coal. The U. S. Attorney will call a special grand jury if necessary.

It is understood that the Department of Justice will insist upon the immediate correction of three matters: Resales through brokers and consequent pyramiding of prices; sales of coal at spot prices which should be applied on contracts; neglect of American obligations in order to export coal at high prices.

A fair-price committee has been selected to co-operate with the Department of Justice in determining price matters in northern West Virginia. The committee is made up as follows: Wheeling district, J. C. McKinley; Upper Potomac district, Douglas Gorman; Morgantown-Kingwood district, J. L. Hatfield; Fairmont district, C. H. Jenkins; Clarksburg district, A. Lisle White; Grafton-Elkins district, Everett Drennen; at large, Brooks Fleming, Jr. George T. Bell has been selected as secretary for the committee.

Assigned-Car Case To Be Tried Before Supreme Court

THE case of the Lamberts Run Coal Co. vs. Baltimore & Ohio R.R. is now before the U. S. Supreme Court. It probably will be argued before the highest tribunal before the end of October. The trial court in this case granted an injunction against the Baltimore & Ohio in the matter of assigning cars for railroad fuel, but the case was appealed to the Circuit Court of Appeals, which reversed the decision of the lower court. The case now goes to the supreme court on a writ of error. There are a number of cases pending which attack the legality of the practice of assigning cars, but since the Lamberts Run case is furthest advanced the decision in this case is expected to settle the question.

Coal Consumed in Six Months by Railroad Locomotives

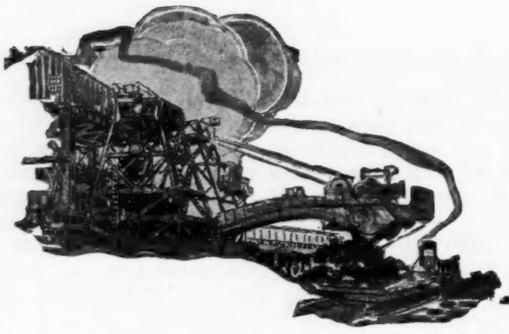
DURING the first six months of 1920 the principal railroads of the country—those with operating revenues in excess of $1,000,000 annually—used 55,325,387 tons of coal in locomotives. This was somewhat in excess of the quantity burned during the same period of 1919, which amounted to 47,585,257 tons. Details of coal consumption during the first six months of 1920 and of 1919 are as follows:

Region	Net Tons Purchased 1920	Net Tons Purchased 1919	Average Cost per Net Ton 1920	Average Cost per Net Ton 1919
New England	2,416,285	2,111,868	$7.08	$5.96
Great Lakes	9,315,074	7,782,016	3.95	3.45
Ohio-Indiana-Allegheny	13,158,608	11,315,750	3.31	2.81
Pocahontas	2,524,336	2,172,705	3.19	2.62
Southern	8,669,843	7,284,145	3.48	3.28
Northwestern	7,372,055	6,476,886	4.01	3.88
Central Western	8,617,569	7,340,126	3.35	3.04
Southwestern	3,251,617	3,151,761	3.96	3.55
All regions	55,325,387	47,585,257	$3.54	$3.35

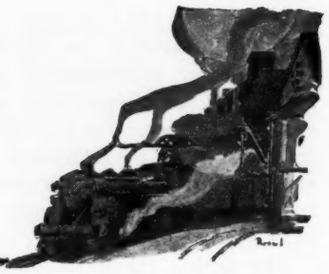
Destination of Cargo Coal Dumped at Lake Erie Ports to Aug. 31*

Destination	1918 Net Tons	1918 Per Cent	1919 Net Tons	1919 Per Cent	1920 Net Tons	1920 Per Cent
American:						
Lake Superior Ports	6,560,000	40.7	6,942,000	45.3	4,228,000	39.8
Sault Ste Marie Pt. and River points	391,000	2.5	216,000	1.4	355,000	3.3
Lake Huron-Georgian Bay ports	328,000	2.0	202,000	1.3	118,000	1.1
Lake Michigan ports	4,600,000	28.6	4,654,000	30.4	2,495,000	23.4
Port Huron and Detroit River	227,000	1.4	209,000	1.4	484,000	4.5
Lake Erie ports	38,000	0.2	56,000	0.4	20,000	0.1
Total American	12,144,000	75.4	12,279,000	80.2	7,700,000	72.2
Canadian:						
Lake Superior ports	1,348,000	8.36	1,094,000	7.1	797,000	7.5
Sault Ste. Marie Pt. and River points	728,000	4.5	496,000	3.2	674,000	6.3
Lake Huron-Georgian Bay ports	666,000	4.1	468,000	3.1	415,000	3.9
Port Huron and Detroit River	294,000	1.8	237,000	1.5	208,000	1.9
Lake Erie ports	8,000	0.04	34,000	0.2	10,000	0.1
Lake Ontario and St. Lawrence River	923,000	5.8	713,000	4.7	859,000	8.1
Total Canadian	3,967,000	24.6	3,042,000	19.8	2,963,000	27.8
Grand total	16,111,000	....	15,321,000	....	10,663,000	....

*Statistics furnished by courtesy of Ore and Coal Exchange.



Production and the Market



Weekly Review

Production of Bituminous Shows Marked Gain — Anthracite Mining Again Approaches Normal—Car Supply Is Not Improved—Prices Are Firm and Demand Strong—Export Inquiries Increase.

WITH the exception of that for Aug. 14, bituminous production for the week ended Sept. 18 was the largest since January, according to figures of the Geological Survey. The output is estimated at 11,614,000 net tons. The anthracite strike caused the combined production of hard and soft coal to fall below the weekly average for August.

Anthracite production increased 153,000 tons, a total of 699,000 tons being mined for the week, about 39 per cent of the pre-strike average. Beehive coke production declined 8 per cent to 402,000 tons.

One factor of the increase in bituminous coal mined was the release of cars from the hard-coal region for use in bituminous fields. The mining of anthracite is now at normal, practically all the men having returned to work. This condition will make fewer cars available for soft-coal loading.

Various local disturbances among the bituminous miners are affecting production and with the expected decrease in car placement will probably curtail next week's output.

Prices remain firm. The demand for all coal is unabated and while there is less buying activity by manufacturers, this is offset by heavy calls for export and retail trade.

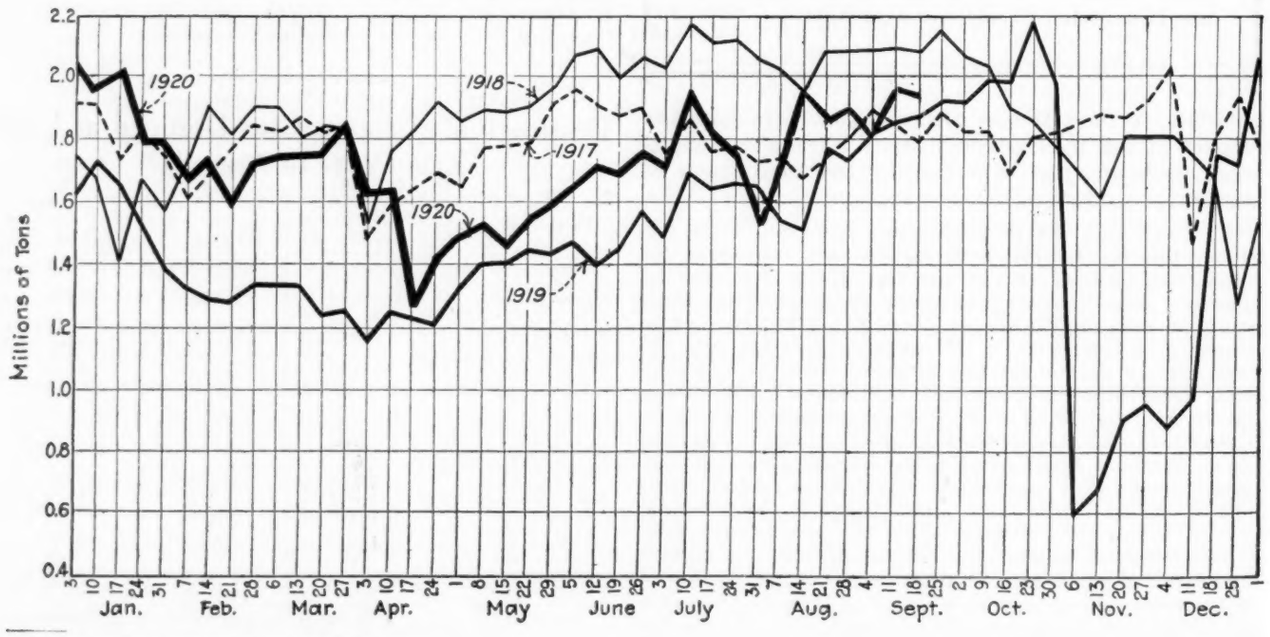
Coastwise movement to New England for the week amounted to 254,000 net tons; by rail 5,824 cars were forwarded. Exports showed a substantial gain, 507,000 net tons being dumped as compared with 439,000 tons for the preceding week.

Lake shipments for the week ended Sept. 25 were 888,993 tons, a decrease of 118,000 tons when compared with the preceding week. Some concern is being shown by shippers and Northwest dock operators over the decreasing amounts being sent forward.

Lake Coal Dumped Season to Sept. 25
(NET TONS)

	Cargo	Fuel	Total
1919.....	17,495,404	823,785	18,319,189
1920.....	14,363,402	823,812	15,187,214

Average Daily Production of Bituminous Coal*



*From weekly report of **Geological Survey**.

Reports From the Market Centers

New England

BOSTON

Railroad Buying Causes Slight Lift in Prices — Better Car Supply, but All-rail Movement Falls Off—Less Coal at Tidewater—Occasional Slow Despatch at Hampton Roads—Higher Prices on Water Coal Increase Inquiry for Rail Deliveries — Widespread Anxiety Over Small Receipt of Anthracite.

Bituminous—Renewed buying on the part of the railroads has caused somewhat higher prices for spot shipment. One road here has bought at around $8.25 for Phillipsburg coal and figures have ranged from that to $10. Competitive buying by brokers has also been renewed on a small scale and it seems now that quotations will be on a higher level for the next 30 days.

Car supply is now fully adequate in most districts, light mining at so many operations having contributed to this result. Receipts at the Hudson River portals have fallen off since Sept. 15. Reserves are still being accumulated, however, without much recourse to spot buying and neither in textiles nor other industries is there prospect of greater production.

Now that Order 11 has been definitely cancelled, the various agencies are counting on less embarrassment over placing grades not well suited to this market. At Baltimore and Hampton Roads there is, at the same time, congestion on high-ash, high-volatiles and an actual shortage of low-volatiles due on contracts.

The past fortnight, there has been difficulty at Norfolk and Newport News over getting contract coal through to the piers. Demurrage has resulted with increased costs to consumers here.

Receipts from Hampton Roads this week are carrying the 40 per cent increase in tolls, and this, together with accrued demurrage, means an advance of more than $1. Naturally, when to this is added the 40 per cent increase inland from rehandling plants at this end, consumers are led again to think of deliveries all-rail. There is still in evidence, however, the old preference for the smokeless coals.

Current quotations on wholesale bituminous range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, net tons	$8.00@ 9.50	$8.50@10 25
F.o.b. Philadelphia, gross tons	11.60@13.30	12.20@14.10
F.o.b. New York, gross tons	12.00@13 75	12.70@14.60

Pocahontas and New River, f.o.b. Boston or Providence are quoted $13.50 @$16 per gross ton on cars.

Anthracite—Resumption of mining last week in the Schuylkill and Hazelton districts somewhat relieved the tension, but shipments to New England are so far extremely light.

Tidewater

NEW YORK

Resumption of Anthracite Mining Is Welcomed — Stocks Are Low—Demand for Bituminous Is Strong—Export Inquiries Increase — Vessels Leave with Short Bunker Supplies.

Anthracite—Resumption of mining was glad news to the local trade. Supplies have reached the low-water mark. Considerable of the tonnage used in downtown office buildings is being taken from reserve stocks on the Jersey side and carried across in trucks.

Supplies at the piers have practically disappeared. With shipments from the mines practically nil, retail dealers were filling orders from their reserve stocks, which are considerably smaller than they have been for the past few years.

Conditions at the ports receiving coals from the lower mining fields are worse than at the upper ports which receive their shipments from the upper fields.

Dealers who are regular buyers of coal received at the upper ports are able to get an occasional cargo but these are few and far between.

Notwithstanding the influx of buyers from Canada and the Northwest, quotations for independent domestic sizes have not advanced. Comparatively little of this coal is coming to Tidewater.

The demand from New England continues strong and wholesalers and operators are endeavoring to send large tonnage forward before transportation difficulties have to be overcome.

Free steam coals are scarce. With the supplies running low, users are now mixing these coals with bituminous. The better grades of buckwheat No. 1 are being quoted around $6 at the mines; rice $2 less, and barley, which was long with some dealers, was quoted $2.25@ $2.50. Quotations for company coals, per gross ton, at the mine and f.o.b. New York Tidewater, lower ports, are unchanged.

Bituminous—Demand is active but pier supplies are not heavy. Prices are a trifle stronger than last week. This may be due to lack of anthracite, and also to the reported action of some operators in adding to the price to partially cover the increase in wages granted the miners in some districts.

There has been an increase in inquiries for export, some heavy tonnages being sought. Coals for bunker are scarce, some vessels leaving this port with low supplies.

Continued improvement in the situation is now expected, with suspension of the New England priority. Other sections of the country are reaping the benefits derived from this suspension and after these needs have been partially satisfied larger shipments will come to this Tidewater.

Although car supply shows improvement there is no considerable activity at the mines. High-grade coals move steadily and command good prices.

Light barges are plentiful in this harbor. Freight charges are normal within the harbor limits. The loaded boats have been nearly cleaned up.

Unclassified high-grade coals intended for New England shipment were quoted at $10.50; Pool 11 from $8.75@ $9.25 and Pool 10 around $10. There was a good demand for Pool 34 and prices were strong.

PHILADELPHIA

Little Anthracite Reaches City—Dealers and Consumers Become More Insistent — Company Prices Unchanged for October—Steam Coals Are Difficult To Get — Bituminous Prices Fail To Drop — Plenty of Strike Talk — Good Tide Business—Coke Prices Are High.

Anthracite—With a week elapsing since the miners began to return it has been the rare exception for any dealer to get coal, that is, those who are located on the Philadelphia & Reading R.R., which line handles the bulk of the city tonnage. Shippers give little encouragement of anything like heavy deliveries. They point out that at many mines this week the resumption was only about 70 per cent and little can be expected immediately in the way of better production. Western points are particularly clamorous at this time.

One of the larger companies has stated that the prices from Oct. 1 will be unchanged. This would indicate that the winter schedule has been settled.

All orders that the larger companies take are accepted with the understanding that they are for October delivery, and even at this the business is being held down to their regular trade on the basis of the allotment made in the spring.

The demand for steam sizes grows stronger. Storage stocks of rice and barley have been almost exhausted. Buckwheat of any grade seems to be out of the question and even old customers are likely to be hampered in getting their full shipments for some time.

Bituminous—The real feature is the firmness of prices. It was thought that with the adjustment of the anthracite trouble there would be some softening in bituminous, but this has so far failed to happen. There have been times of temporary softness in prices. For a few days Pool 10 was selling around $9.50, with Pool 11 about $1 less.

Shortly after there was a jump of a dollar. The chief reason seems to be the growing unrest among the bituminous workers. The Central Pennsylvania district is particularly troublesome just now.

Fairmont prices are still high. They started the week $9.50@$10 and the middle of the week saw $10.50 reached. Late in the week prices took a quick jump to $11.50@$12, and even these prices only represented the ordinary grades, as the low sulphur coals were entirely out of the spot market at any price.

The demand from the local trade is light. With industries quiet, the buying is far from heavy and most sales are made to concerns who feel they are compelled to buy a small amount to tide them over to the time when they feel sure that prices must be lower by several dollars.

Public utility plants have secured an extension of the order which expired on the 18th and the coal which was expected to be available in a moderate amount from that source has not reached the spot market. In addition, the railroads are taking a heavy share of high volatiles.

The main strength of the situation is in Tide coals. Without this business there would be available a heavier tonnage than the spot market would absorb, without a stringent price reduction. Export business still goes on under the permit system and the tonnage moving seems only to be limited by the vessels available.

Coke—Prices remain high. Furnace coke of Connellsville grade is around $18, with foundry at $19@$19.50. There have been some offerings of foundry at figures running $14.50@$17, but much of this is of a quality that has difficulty to make a market.

BALTIMORE

Bituminous Prices Quite Firm — Demand Is Heavy—Car Placements Are Not So Good—Anthracite Shipments Are Now Coming Forward.

Bituminous—The many predictions that the break in the coal market which had become evident just prior to the ending of the New England preferential order, would be accentuated by the end of this order, have not been borne out as yet.

The best Pennsylvania line coals are readily commanding $10.50@$11, and in some cases $11.50, while best Baltimore & Ohio line coals are $10@$11. Even the least desirable coals are readily absorbed in a market of steady and healthy demand for all classes of fuels, and are commanding from $8 up.

Immediate demand, both for domestic and at Tide for bunker loading, combined with the fact that car supply has dwindled decidedly, has stiffened prices considerably. Car supply on the Baltimore & Ohio R.R. eastern line is in the 60 per cent class, while the western lines have dropped to around 55 per cent run. The Western Maryland R.R. supply has fallen in some districts back of 75 per cent. Baltimore & Ohio daily loadings are now at times considerably below the 3,000-car mark, while the reserve at the pool has dwindled to around 1,000 cars at Curtis Bay and but a few hundred at Canton.

Anthracite—It can now be reported that hard coal deliveries are increasing. At first the renewed receipts consisted largely of independent coals, but now a fairly free flow is reported. It will take an abnormal run for several weeks to really put the trade here back on a normal basis. The better run covering practically all sizes is encouraging, however, and the proportion, if increased a bit and then held steady, would allow a fairly even distribution of coal for the most urgent needs before winter sets in.

Lake

BUFFALO

Bituminous Demand Is Lower—Price Decline Continues — Production Not Hampered by Car Supply, but Labor Is the Controlling Factor — Hard-Coal Situation Is Better—Lake Dumpings Negligible—Coke Demand Is Good.

Bituminous—The situation has improved in general but for the miners' meetings in the Clearfield district and the continued demands for more pay. Some of the shippers predict a stiffening market because of the light stocks in railroad hands and the near approach of weather that will require coal for heating.

It is plainly a contest between the consumer and the miner, and shippers generally say that the consumer will win. There are already reports of coal offered below $8. Shippers say there is too much surplus coal now in the country to expect anything but steady decline in prices for some time yet.

Of course the miners will stand in the way of price reduction as long as they can. Many of them are getting their pay on a percentage of the price of coal and if that goes down the wages must go too, or the mines will have to shut down. The car shortage is no longer the main element in production, for it is easy to get freight moved now.

The price of gas coal continues high. Seldom can it be moved for less than $10 and often even more is asked.

Anthracite—Production is now coming up again, but the men are returning to work slowly. At any rate the situation, which has been extremely bad, is improving. The scattering of the men to work in the fields, to take advantage of the fine weather and to attend picnics and fairs, is always large at this time of the year and will continue till the weather becomes unpleasant, when they will return rapidly. Coal came in at a fair rate last week, considering the condition of the mines, but most city retail trestles did little business.

Lakes—Loading was reduced so that some days nothing cleared. Shippers predict that the situation will improve fast enough now to prevent any serious difficulty.

The amount of coal loaded into vessels for the week was only 31,550 net tons, of which 6,500 tons cleared for Waukegan, 12,250 tons for Duluth and Superior and 12,800 tons for Chicago.

Coke—The demand is in excess of the supply and prices are strong at $18 for 72-hour Connellsville foundry, $17 for furnace and $14 for low grades.

There are offerings of byproduct coke at $10.75@$11 for stove and nut and $9 for pea delivered, with no large sizes moving.

MILWAUKEE

Supply Still Matter of Great Anxiety —Receipts of Anthracite Falling Off— Shortage of High-Grade Soft Coal Is Hampering Utilities.

Receipts of anthracite by Lake show a falling off, but the soft-coal tonnage is increasing. As the liberal inflow of hard coal had served to instill confidence as to the winter supply, this drop naturally has a disturbing influence.

The shortage in high-grade bituminous, which is practically unobtainable here at the present time, has become so acute that public utilities are unable to render efficient service. The gas furnished is short in heat units and patrons of electric companies are warned that there is danger that the supply will not be sufficient during the busy hours of the day. Strict economy is urged.

The better soft coal which comes from the East seems to have been bought up. Prices of coal hold steady.

Receipts of coal by Lake from the beginning of the season aggregate 565,146 tons of anthracite and 1,401,400 tons of soft coal, against 633,267 tons of the former and 2,388,618 tons of the latter during the same period last year. The docks begin to show signs of an accumulation of soft coal.

MINNEAPOLIS

Stocks Are at Minimum—Urge No Modification of Order 10—Heavy Movement by Lakes Now Necessary.

Trials and tribulations have attended the local coal trade for several years but never has there been quite so difficult a situation to face as now.

When the end of July was at hand it was clear that the Northwest would be entirely destitute of fuel if there were not heroic measures taken, and the Interstate Commerce Commission granted a priority via the Lakes.

But Order 10 was not self-enforcing. It was one thing to order 4,000 cars of coal a day diverted to the Northwest, but it was quite another thing to produce that number of cars.

So, with September gone, there is a shortage of soft coal on the docks on Lake Superior of 4,500,000 tons and an anthracite shortage of around 10 per cent. The hard coal situation was running fairly even with a year ago up

to the time that the "vacation" obsession struck the miners. It may be made up later but this seems unlikely, for there are accumulated orders from the territory nearer at hand which will prevent any surplus to make up the shortage thus developed.

There remain some 8 or 9 weeks of Lake navigation at the most. It is in a period when storms and difficult navigattion may be expected. The possibilities seem to be limited for making up any great amount of the shortage.

To add to this trying situation, there are repeated efforts being made on the part of cities of Ohio and adjoining states to have a portion of the coal which is coming to the Northwest diverted to other districts.

One cause for the shortage was the fact that the scarcity prompted people to bid up the market. Local concerns had coal under contract at $8@$9 delivered, but the open market was paying that much at the mine. Coal has therefore been listed in the Twin Cities $8@$13 a ton. Buyers who want to get quick shipment have to pay the top price.

No one knows how long these extreme prices will keep up. Many expect them to fall off as soon as there is a reasonable catching up with the demand.

The stocks in the interior of the Northwest are at a minimum, ranging 10 to 30 per cent of the normal winter's supply. The docks are almost bare.

CLEVELAND

Bituminous Market Is Easier—Lake Receipts Lower—Industrial Supplies Are Better—Retail Shipments Expected To Increase.

Bituminous — With the ratification of the agreement reached between representatives of northern Ohio cities and coal operators and railroads, a better flow of coal into this district is expected soon.

Cancellation of Service Order 11 for coal movement to New England is expected to release additional fuel for this territory. This factor, combined with the general improvement in railroad movements, should result in a much better coal situation shortly.

Steam coal for industrial uses is showing an easier tone, the spot market now being quoted at $8.25@$8.75 a ton as compared with the peak price of $10 and more reached some weeks ago. The trend in the industrial coal market is due to the slowing down of manufacturing activities in this district.

Lake—Some shortage of car supplies continues on a few roads. Receipts for Lake shipment are light. Only about 3,300 cars are being loaded daily as against the average of 4,000 cars the latter part of August.

Retail prices of coal per net ton delivered in Cleveland follow: Anthracite—egg, $15.85@$17; chestnut and stove, $16@$16.25. Pocahontas—shoveled lump, $16; mine run, $12.25@$12.50. Domestic bituminous — West Virginia splint, $13@$13.25; No. 8, $13.25; Millfield lump, $14.50; Cannel lump, $15@$15.50. Steam coal—No. 6 and No. 8 slack, $11.50@$12.75; No. 6 and No. 8 mine run, $13.60@$14.25; No. 6 ¾-in. lump, $14.45.

Inland West

CINCINNATI

Midwest Demand Is Strong—Local Situation Good — Better Production Is Noted—Prices Remain Firm.

No domestic consumer here need worry about coal this winter. A telephone survey of dealers in Cincinnati taken at random throughout the city showed that most of them had coal, though some smaller ones were out of it because they depend upon intermittent rail shipments. Prices on domestic lump deliveries in the neighborhood served by each dealer were $9@$10.75 a ton.

With production on a larger scale in the West Virginia fields supplying the local market and with better transportation facilities, Cincinnati dealers believe they will continue to have plenty of coal right along. Production in the eastern Kentucky fields is still far below normal. Little change is observed in prevailing prices in Kentucky.

The demand from all sources continues brisk. From many cities in the Middle West come pleas for coal and some Ohio cities report supplies are so low that even the schools have no fuel for the coming winter.

DETROIT

Inquiry for All Coal Continues — No Improvement in Supply — Inadequacy of Receipts Continues To Create Apprehension.

Bituminous—While a few wholesalers and jobbers report a slight increase in shipments, others say they are getting no greater supply than before and the theory is advanced that considerable of the coal released from New England shipment is going to the Lakes.

Current receipts are just about equal to the present requirements of public utility companies and manufacturing plants, very little excess remaining for the retail dealers or to be used in strengthening the reserves of industrial consumers. Despite assurance from Washington of an adequate winter supply of fuel, both steam and domestic consumers find reason for apprehension in the outlook. With almost no coal from Kentucky and West Virginia mines coming this way, only a small quantity is arriving from Ohio while shipments from Illinois and Indiana are very limited.

Anthracite—Very little hard coal is coming to Detroit, the small available supply being derived principally from the independent operators. Though a nominal price of $16.50 is quoted on nut, stove or egg sizes, buyers more often are paying about $20 a ton.

ST. LOUIS

Car Shortage Continues — Labor Troubles Waning—Receipts Are Inadequate—Northern Market Declines—Good Bunkerage Tonnage.

St. Louis proper is pretty well taken care of in steam sizes from the Standard and Mt. Olive fields. Domestic tonnage is still short. Small dealers are unable to secure anything like their requirements at competitive prices. Country conditions on Mt. Olive and Standard coal are still unusually bad.

Car supply is back to about 2½ days a week on trunk lines, excepting the Louisville & Nashville and Illinois Central roads, which show up somewhat better on account of surplus equipment released by strikes in western Kentucky and Alabama. The short line coal roads are working about 5 or 6 days a week.

A large tonnage is moving to the North and East at somewhat lower prices; $7@$8 for mine run and lump and $6 for screenings. Bunkerage market at Southern ports is stronger at prices of $7 for screenings, $7.75 mine run and $8.50 for lump. Local prices range $4@$6.

Car supply in the Carterville and Duquoin districts is about 4 days per week. Labor troubles are at a minimum. Prices go as high as $8.50 for prepared sizes and $7.50@$8 for mine-run. Contract receipts are light.

Retail prices are: Carterville $9.50, Mt. Olive $8@$8.50, Standard $7.50, West Virginia smokeless egg and lump $15.50@16.50. Anthracite chestnut is $18.10, stove $17.85, with practically no receipts.

INDIANAPOLIS

Car Placement Improves — Production Is Nearly Normal — Prices Decline — Local Trouble in Clinton Field.

Indiana is showing a weak market, according to operators. During the past two weeks the railroads have provided much better transportation and production has been more nearly normal.

This condition results in more coal being put on the market and has had an effect on prices. Jobbers have been able to find more free coal and prices are so widely varying that it is practically impossible to quote representative figures.

Retailers say there is little buying on the part of the general public, though industries are beginning to invade the market again. The small consumer has been led to believe that prices are due for a tumble before winter sets in and is in the market only for sufficient coal to meet actual needs.

Many of the operators report that Eastern utilities and industries are signing contracts at good figures.

While labor in general is showing a better working disposition, some trouble is being experienced in the Clinton field, where about 23 operations are closed by local strikes.

CHICAGO

Demand Continues Strong—Car Supply Is Unchanged—Prices Remain Firm—Retail Situation Is Causing Apprehension.

The local steam market has eased slightly during the last few days. This is offset by urgent demands from retailers, who are making strenuous efforts to accumulate a supply. Illinois and Indiana fields are also being called on for southern shipments to replace Alabamas curtailed production.

The wage award recently made to day men is the cause of dissatisfaction on the part of diggers in some of the Illinois fields who are, in turn, demanding increases.

Receipts of anthracite and smokeless are almost nil. Retailers declare their stocks are entirely inadequate and are urging bituminous substitution for these fuels.

Scarcity of cars still limits mine operations. Labor's attitude is not materially improved, and the result is continued under-production with aggregate demand as strong as ever.

Prices open market are: Indiana Fourth Vein prepared, $8@$8.50; mine run, $7@$7.75; screenings, $7@$7.50. Fifth and Sixth Vein prepared, $7.95 @$8; mine run, $6.50@$7; screenings, $6@$6.50. Illinois, Franklin, Williamson and Saline prepared, $8@$8.50; mine run, $6.75@$7.25; screenings, $6.50@$7. Central district prepared, $7@$7.75; mine run, $6@$6.50; screenings, $5.50@$6.25. Standard prepared, $7@$7.50; mine run, $6@$6.50; screenings, $5.50@$6.

COLUMBUS

Falling Off in Car Supply Has Reduced the Output—Prices Are Still High—Lake Trade Is Now Attracting Attention.

With a continued good demand for all grades and a shortage of reserve stocks, the market still remains firm. A lower supply of cars in all sections has reduced the output to between 50 and 60 per cent.

In the Hocking Valley field production has been reduced from 75 per cent to about 55 or 60 per cent. Pomeroy Bend, Cambridge, Tuscarawas and Crooksville report about 50 per cent production. Little free tonnage is available.

Lake trade is also slowing up under the influence of the poor car supply. This is causing concern to Lake shippers and prices have advanced as a consequence. Lake coal is $6.50@$7 and in some instances higher.

Consumers are still bringing pressure to bear to secure modification of the Lake priority order. It is estimated that only about 24 per cent of the winter's supply is in the bins of users as compared with 65 per cent usual at this time of the year. Retail prices are firm and show a range of $1.50@$2. Hocking lump or mine run retails $8.50 @$10. Pomeroy Bend lump sells $8.75 @$10.25 and West Virginia splints $9.50@$11. Pocahontas is scarce and is quoted $12.50@$15.

Prices at the mines for grades used in central Ohio Are:

Hocking lump	$7.75@$8.75
Hocking mine run	7.50@ 8.50
Hocking screenings	7.00@ 8.25
Pomeroy lump	8.00@ 9.00
Pomeroy mine run	7.75@ 8.75
Pomeroy screenings	7.50@ 8.25
West Virginia splints, lump	8.25@ 9.25
W. Va. splints, mine run	8.00@ 9.00
West Virginia, screenings	7.50@ 8.25
Pocahontas lump	8.50@ 9.75
Kentucky lump	8.25@ 9.00

West

DENVER

Bituminous Conditions Are Better—Prices Are at High Peak—Lignite Advances in Anticipation of Wage Award—Demand Is Good.

Bituminous—Favorable weather conditions and a greater distribution of cars have enabled operators to make an effort to catch up with back orders.

Routt County bituminous is retailing in Denver at $12.50. Walsenburg grades are $11@$12. Trinidad coking steam is $8.05, while Routt County steam is selling for $6.75.

Retail orders flooded dealers about the time the recent freight advances were authorized and deliveries on this basis forestalled the possibility of any immediate shortage.

Lignite—Labor leaders have given the customary 30-day notice of demands for higher wages, based largely upon the concessions granted in the Central Competitive Field, but have also included a wedge for union recognition. Unless this is granted, or a compromise reached, some 4,000 miners may be induced to take a "vacation" Oct. 8.

In anticipation of the increase in wages, many operators have added 30c. a ton to the mine price, the wage demands of the men, if granted, being retroactive to Sept. 1.

Prices for lignite have also reached the peak, in the estimation of many coal men, unless further disturbances upset the present level. First grade lignite is retailing in Denver for $9.95, while second grade is bringing $7.85@$9.15. Steam is selling for $5.30 in retail markets.

The demand is good, although the retail trade is again being slowed down by unusually good weather for this time of year.

South

LOUISVILLE

Spot Market Is Very Active — Little Tonnage Is Available — Profiteering Charges Are Not Affecting Prices — Car Supply Continues Poor.

Continuation of assigned car order for another thirty days will probably prevent any large amount of spot coal being on the market, which will result in continuation of high prices. Eastern Kentucky assigned car coal is quoted $6.25 for gas mine run.

There are many buyers in the field for spot coal and they are bidding against one another for available tonnage. Exporters are also becoming more active, and this coupled with Lake movement and short car supply is bound to hold up prices.

On Sept. 20 the Federal Grand Jury at Covington announced it had decided that a price of $5 a ton maximum was fair for eastern Kentucky and prices beyond that amount represented profiteering. The decision was reached after investigation of coal books and records, seized a few weeks ago.

Operators and jobbers are of the opinion that the finding of the Covington jury will have no effect on prices. The coal trade feels that when the Supreme Court gets around to a decision it will hold the Lever Act to be unconstitutional.

Car supply continues poor, records for the Hazard field, showing 37.82 per cent placement other than cars assigned for railroad fuel. River shipments are larger than last year, a total of 53,330 tons coming to Louisville through Aug. 31.

Modification of the open-car order affecting wagon mines, permitting use of such cars where they can be loaded in twenty-four hours, has been accepted as satisfactory and fair to both tipple and wagon mines in Kentucky.

Retailers report that consumers are waiting for cheaper coal, and will not touch the low grades offered, wanting the best and nothing else, while there is really very little high-grade coal available at this time.

Eastern Kentucky gas mine run is quoted $8.25@$8.75 for spot; nongas $8@$8.50. Block coal is quoted around $10.

Canada

TORONTO

Shipments Held Up by Strike and Embargo—Increased Demand Owing to Cooler Weather—Advance in Prices.

Supplies of hard coal have lately been considerably below normal as result of strike conditions at the mines. Shipments of bituminous have also been held up by the embargo west of Buffalo. With the adjustment of labor difficulties, it is expected that larger shipments of anthracite will come forward in a few days.

Cooler weather has resulted in a rush of orders, which dealers are unable to fill. The increase in Canadian freight rates has resulted in another slight advance in prices.

Quotations per short ton are as follows:

Retail:	
Anthracite, egg, stove, nut and grate	$16.90
Pea	15.40
Bituminous steam	16.00@ $17.40
Domestic lump	18.15
Cannel	20.00
Wholesale f.o.b. cars at destination:	
Three-quarter lump	14.50@ 16.00

News From the Coal Fields

Northern Appalachian

CONNELLSVILLE

Embargo Disturbs Distribution — Consumers Less Anxious for Spot — No Interest in First Half Contracts—Spot Foundry Prices Are Lower.

Production of coke in the Connellsville and Lower Connellsville region is running about the same as formerly, but well below the rate in March. There is no indication that a return to the March production will soon occur.

Distribution is altered by embargoes, the Monongahela R.R. refusing to let loads go out over the Pennsylvania unless replaced by corresponding numbers of empties. For the time being, nearly all coke loaded on this connecting line goes out over the P. & L. E., which is supplying almost its full quota of cars, and coke is much easier for P. & L. E. delivery.

On the whole, offerings of spot coke in the past few days have been hardly as heavy as the average lately. On the other hand, the disposition of furnaces and foundries to buy in the spot market is reduced further. Foundries seem to be less busy, while the merchant blast furnaces have a stagnant pig-iron market and there is less incentive to buy high-priced coke in order to rush completion of present pig-iron contracts. Contract deliveries are fair and some furnaces have slackened their blast so as to get along with these.

There is no interest in the contract market, offerings of furnace coke at $14 for the first half of next year by one interest not having produced any general disposition to negotiate. Buyers are disposed to hold off, feeling that the lapse of time will be in their favor.

Spot coke is $16.50@$17 for furnace and $17.50@$18 for foundry, per net ton at ovens.

The *Courier* reports production in the Connellsville and Lower Connellsville region in the week ended Sept. 18 at 200,930 tons, a decrease of 16,750 tons.

PITTSBURGH

Embargoes Soften the Market — Steel Interests Not Greatly Disturbed by Continuance of Coal Car Definition.

Car supplies are running about the same as formerly, on an average, although there are great ups and downs. In point of service, transportation is not as good, as important embargoes have been placed.

The Monongahela R.R. has placed an embargo against coal going to the Pennsylvania R.R. unless that road will furnish a certain quota of empties, which it apparently cannot do. The Western Maryland R.R. has placed an embargo against the Pittsburgh & Lake Erie R.R. This forces a great deal of coal, chiefly from the Connelsville region, to move North over the P. & L. E. R.R. and the coal market at points that can be reached has been softened. Some Tidewater shipments are shut out of their usual channel, being forced over the N. Y. Central instead, if they can get through that way.

Coal operators are gratified by the Interstate Commerce Commission's order extending indefinitely the car preference order and at the same time refusing to raise the limit from 38 to 42 inches in the definition of what makes a flat bottom gondola a "coal car." The steel interests that were pressing for this modification, in order to get more gondolas for their own use, are less concerned than would have been expected, as their transportation service has greatly improved since the efforts were set on foot to have the modification made.

Spot coal market is easier, but the only softness observed is attributable to embargoes which increase the offerings to free territory. Steam has declined 25c.@50c. in the week, while gas and by-product have dropped to the level of steam. Price is now at $8 for steam, gas and by-product, per net ton at mine, Pittsburgh district.

UNIONTOWN

Rail Congestion Clogs Yards — Prices Remain Firm — Embargoes Hamper Production.

Car supply dominated the movement of coke and coal last week but failed to materially affect prices. Coal is selling at $10.25 for P. R.R. Pool 34 and $10 for B. & O. R.R. same grade, with byproduct at $10. Steam coal on both roads is $9. Pennsylvania furnace coke is $17.25 with few sales, while Lake Erie coke commands but $16.25. Foundry grades run one dollar higher.

The rail situation has materially lessened forward movement of fuel and has clogged the yards and sidings almost to capacity. This situation is resulting from diverse railroad orders. Embargoed from Western Maryland connections, the Lake Erie management of the Monongahela Ry. delivered an ultimatum which required the P. R.R. to replace all loads taken from Lake Erie rails with an equal number of empties. A few days later the Pennsylvania commenced placing cars on the Monongahela Ry. but failed to remove any loads, thus adding to the growing congestion. Until some compromise is effected there seems little prospect of a decided improvement.

Coal car placement followed the record of the month, with poor supply from the Pennsylvania but quite excellent placement by the Lake Erie. On the Monongahela the Pennsylvania placed a 25 per cent car supply, while placement on the same road by the Lake Erie was about 105 per cent.

Coke car supply was slightly better, the Pennsylvania placing about 30 per cent on the M. Ry. tracks, while the Lake Erie made a showing of 110 per cent.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL

	1920		1919 (a)	
	Week	Calendar Year to Date	Week	Calendar Year to Date
Sept. 4b	11,167,000	358,573,000	9,651,000	307,364,000
Daily average	1,861,000	1,703,000	1,821,000	1,459,000
Sept. 11b	10,645,000	369,218,000	11,046,000	318,410,000
Daily average	2,008,000	1,710,000	1,841,000	1,475,000
Sept. 18c	11,614,000	380,832,000	11,253,000	329,663,000
Daily average	1,936,000	1,716,000	1,876,000	1,485,000

ANTHRACITE

	1920		1919 (a)	
	Week	Calendar Year to Date	Week	Calendar Year to Date
Sept. 4	1,084,000	58,614,000	1,349,000	55,968,000
Sept. 11	546,000	59,160,000	1,408,000	57,376,000
Sept. 18	699,000	59,859,000	1,665,000	59,041,000

BEEHIVE COKE

United States Total

Week Ended				
Sept. 18	Sept. 11	Sept. 20	1920	1919a
1920c	1920b	1919	to Date	to Date
402,000	438,000	449,000	15,292,000	14,141,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision. All figures in net tons.

NORTHERN PAN HANDLE

Production Placed at 70 Per Cent—Priorities Take Heavy Tonnage—Little Free Coal Available.

Transportation facilities are still limited to about 70 per cent of mine rating. While Lake requirements during the period ending the 18th were unchanged as compared with previous weeks yet during the week ending Sept. 25, mines on the Pennsylvania R.R. were called on to ship 40 per cent of the coarse coal produced to Lake points.

While there was more variation in the percentage required for the Lakes from mines on the Baltimore & Ohio R.R. the quota was 50 per cent of all coal loaded. The general movement was good and labor conditions continued to be satisfactory, although there were not enough miners to run to capacity.

Limited production cut down the free coal available. In fact, between Lakes, public utilities and the railroads, Northern Pan Handle mines experienced difficulty in filling their contracts.

FAIRMONT

Production Is Greatly Increased — Lakes' Quotas Are Enforced — Export Movement Gains — Prices Are Firm.

The week ending Sept. 18th was a most satisfactory one from a production standpoint as cars were furnished in sufficient numbers throughout nearly the entire week to keep mines going most of the time, though a congestion of loads on the lines of the Baltimore & Ohio R.R. was beginning to develop toward the end of the week because of slow movement on the Cumberland Division of that road. Suspension of activities in the anthracite fields made more cars available elsewhere. Assigned cars were much in evidence throughout the week.

A number of shippers having failed to meet the requirements covering lake shipments, railroads operating in the northern part of the state made it plain that, unless producers shipped their quota, such coal as had been loaded for other markets would not be handled. With a stronger insistence upon meeting Lake requirements, the movement was somewhat better but hardly up to that of the preceding week.

Exporting appeared to be on the increase following a larger issuance of export permits. With more coal flowing to Tidewater it was believed that prices might become somewhat firmer. Railroads continued to secure a large percentage of the Northern West Virginia production.

Operators were preparing to attend the session of the Federal Grand Jury at Martinsburg, before which they have been summoned to appear. Virtually every operator in the northern part of the State has received such a summons. However, after a conference at Washington, the Department of Justice ordered a week's postponement of the investigation.

EASTERN OHIO

Prices Are Firm—Car Supply Unimproved—Labor Troubles Cause Apprehension—Heavy Lakes Shipments.

Considerable apprehension is felt that the threatened outlaw strikes on Sept. 25 may assume quite general proportions, but the best informed seem to feel that any suspension in mining that may occur will not survive longer than a week or two. The movement for suspension of work is apparently being carried on by the radical elements in the miners organization and the hope prevails that the conservatives may be able to control the situation and avoid the trouble.

Production for the week ended Sept. 18 was about 200,000 tons, of which the railroads absorbed 80,000. The major portion of the balance went to the Lakes for the Northwest, through increase production and shipments to the Lakes for the Northwest, through improvement in car supply, as pledged by the railroads in the meeting held in Washington last week.

Prices for Pittsburgh No. 8 mine run or ¾-in. lump remain firm at $6.50@$7.

Car supply of about 75 per cent for the past week showed no indication of improvement.

Middle Appalachian

NORTHEAST KENTUCKY

Production Curtailed by Poor Transportation Facilities—Operators Discuss Situation at Meeting.

Headquarters of the Northeast Kentucky Coal Association was a Mecca for a number of members of the Association drawn by a meeting which had for its object the discussion of transportation problems which are inseparably woven with production in the Northeast Kentucky field at the present time.

Railroad facilities were described as being not only unsatisfactory but utterly inadequate in view of the growth of the industry. The general complaint was that the maintenance of tracks was neglected and that the Chesapeake & Ohio R.R. was not furnishing sufficient motive power and coal-loading equipment.

In proof of the poor condition of the track, frequent wrecks and the endless delays entailed by operators were pointed to. The association will undertake to have the Chesapeake & Ohio R.R. double track its Big Sandy Division and put on enough locomotives and cars to move the tonnage originating on that division.

POCAHONTAS AND TUG RIVER

Car Shortage Is More Pronounced—Labor Losses Are Lower—Slow Price Recession Continues.

Production in both the Tug River and Pocahontas fields during the first 18 days of September was running behind the same period of August, because of an increasing car shortage. While labor shortage losses were being cut down car shortage losses were on the increase.

Pocahontas production in the period ending Sept. 18 was averaging nearly 90,000 tons short of normal, largely because of car shortage, though at the same time a labor shortage was entailing losses of about 30,000 tons.

Two factors are responsible for the growing shortage of equipment on the Norfolk & Western R.R. One was the paucity of boats both at Tide and the Lakes. Operators were also of the opinion that public utility consignees were holding loads longer than necessary.

Consignments to the Lakes were fairly large, constituting the bulk of western shipments. Export shipments were also large, but movement to New England declined.

While there was an absence of speculative buying to a great extent, yet there was a ready market for Pocahontas fuel, prices still being lower than the August level.

There was a more pronounced car shortage in the Tug River field. Scarcity of bottoms to handle the large tonnage reaching Tidewater and the Lakes and the consequent delay in releasing equipment were responsible.

An improvement in the morale of the miners and greater willingness to work is conducive to a larger production than was the case in August. The losses from an increasing car shortage, however, are more than overbalancing this gain. Lake shipments continue to be heavy and exporting was on a fairly large scale.

LOGAN AND THACKER

Logan Maintains Good Production Rate —Williamson Output Makes Little Gain—Prices Are Lower—Lakes Tonnage Heavy.

During the period ended Sept. 18 it was possible for the Guyan field to keep up to the high production mark for the year established during the previous week. The mines had an unusually good car supply throughout the week; output averaged between 35,000 and 45,000 tons a day, a large part of which was being shipped to Lake points.

It was necessary to ship the bulk of the output Westward since there was an embargo on coal originating at points west of St. Albans, yet the shipments Eastward to inland points were fairly large. Prices in the spot market were avaraging about the same as those in the Kanawha field, $7@$9. Free coal was almost impossible to secure, however, even though buyers were largely conspicuous by their absence.

In the Williamson field, companies whose plants were closed down several months ago because of the strike are slowly gaining ground. Production in

the period ended Sept. 18 reached about 60,000 tons. Strike losses were not far from 100,000 tons. There was an absence of any disorder in the field, Federal troops having a most quieting effect. Such mines in Williamson field as were operating experienced no difficulty in securing as much equipment as needed.

NEW RIVER AND THE GULF

New River Production Declines While Winding Gulf Output Increases—Prices Are Firm but Spot Demand Is Weaker —Export Shipments Heavy.

Less coal was produced in the New River field than in any recent week, in the period ended Sept. 18. The car supply was so short that mines were unable to operate more than three or four days during the week at the most.

With production so limited it was even difficult to meet contract obligations, leaving little free tonnage available. Production was billed to Eastern points for the most part, a large proportion going for export, New England securing only a small portion. Shipments to Western points were almost negligible.

Little change was observed in prices. While buyers were still largely remaining out of the market, it was having little effect on prices and certainly none on production.

In the Winding Gulf region mines dependent upon the Chesapeake & Ohio R.R. found it difficult to secure an adequate car supply. Such was not the case at mines on the Virginian Ry. In fact these mines were receiving a better supply than had been in evidence for some time and transportation conditions were rapidly approaching normal. The fact that many of the new 120-ton cars were in service is adding very materially to the movement of coal. The Chesapeake & Ohio, however, had only enough cars for its mines to enable them to work about half the week. Winding Gulf miners received a wage boost during the week just as had been the case in the New River region during the previous week.

KANAWHA

Car Supply Was 75 Per Cent in Early Part of the Week—Dropped to 50 Per Cent—Demand for Coal Still Strong—Small Export Business Reported—Prices Decline.

Kanawha mines were not faring so well as others in the high volatile territory. The week was ushered in with about a 75 per cent car supply, and during the remainder of the week there was a dwindling supply of cars in evidence. Mines were not able to load to more than 45 per cent of potential capacity during the latter part of the week. Thursday's production as an example was 16,450 tons and Friday's 19,950. One reason for the shortage was the restricted number of cars being received by the Chesapeake & Ohio from Western connections. Production was probably in excess of that for the week ending Sept. 11, owing to the fact that there were six working days available, yet the shortage of cars was still curtailing production. Mines had toward the end of the week only a 20 per cent supply.

Comparatively little coal was being sent to New England and none after the Commerce Commission had suspended Service Order 11. Exporting of coal was not on as large a scale as during August and earlier months but lake shipments were comparatively large in volume throughout the week.

Demand for Kanawha coal was stronger in Western markets, apparently, than in Eastern markets, and while operators stated that prices were still on the downward path, yet inland was still hovering around $7 a ton and export $9 a ton.

Middle Western

DUQUOIN

Transportation Facilities Are Much Improved—Priorities Take Heavy Tonnage—Mines Operate Nearly to Capacity.

Mining conditions in this region have been improved to such an extent that at the present time nearly all of the mines are working between 90 and 100 per cent capacity. Since August 15th a decided change for the better has been noticed in the service of the Illinois Central R.R. on which the main car supply is dependent. Many of the mines in the vicinity are operating on priority orders, however, even those which are not working under such conditions are getting ample cars to enable them to run five days and better per week.

WESTERN KENTUCKY

Strike Is Forcing Higher Prices—Operators Stand Firm—Production Is Not Materially Reduced.

The strike, which affects Muhlenberg, Union and Henderson counties principally, has not spread to Madison or Webster counties to any extent. Better car supply is resulting for operating mines and the strike is not affecting total production of the field to any great extent.

However, the strike is causing a more active demand for spot coal. It is claimed that there are many buyers after available supplies, resulting in markets being slightly higher, with mine run around $8@$8.75.

It is believed that the strike may be settled within the next few days, although the miners' union is not showing any weakness, and there have been but few desertions from the operators ranks. Some few non-affiliated mines have agreed to pay the union demand. Some of the largest mines in the Western Kentucky field are in counties that are not affected.

Western

OKLAHOMA

Aid of State Corporation Committee Is Asked—Coal Is Released for Ginning—McAlester Mines Make Heavy Shipments.

Railroads have been diverting practically all shipments for their own use. The shortage has become so acute that large industries asked the State Corporation Commission to take the matter in hand. The Rock Island Ry. will release considerable coal, to be distributed by the commission to cotton gins along its line.

Much coal is being shipped from the McAlester mines to northern Texas, where the situation is now improving. Due to strikes in Kansas and Illinois mines heavy shipments are moving to points normally supplied by those fields.

Canada

ALBERTA

Coal Production Is Greatly Increased—Lack of Orders Curtails Lignite Production.

The official figures up to the end of June this year give an output of 3,043,940 tons, compared with 2,068,907 last year. This is for both bituminous and lignite.

There has been more fuel marketed up to this time than in the history of coal production in Alberta. It is also pointed out that more coal will be required from these mines than ever before, on account of the shortage in the United States.

The Winnipeg market is most encouraging. The actual output, however, to that market, and to further Eastern points, will solely depend upon freight rates. If these are prohibitive, a staggering blow will be dealt the industry.

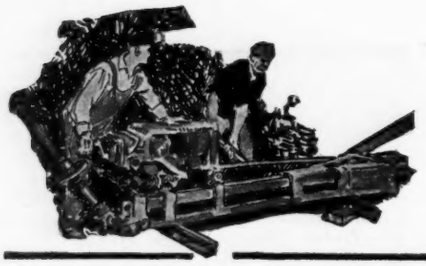
While the bituminous mines in Alberta have been working fairly to capacity, the lignite fields, owing to lack of orders, have for some time fallen far short of this.

BRITISH COLUMBIA

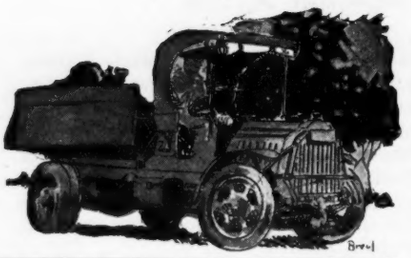
August Production Declines—Indolent Labor Is Cause—Export Possibilities Are Excellent.

The coal production of Vancouver Island Field for the month of August was 117,194 tons as compared with 140,512 tons for July.

The decrease is attributed to labor conditions. Operators are finding it an increasingly difficult matter to induce miners to work even a fair portion of the time. The embargo against export of eastern Canadian coals has opened up unusual overseas possibilities. However, it is doubtful if the mines will be able to take care of more than the local domestic and bunker trade.



Mine and Company News



CALIFORNIA

San Francisco — Negotiations are pending for the sale of coal mines in Contra Costa County by the Southport Land & Improvement Co. The mines are situated in the Coast Range Mountains. Operations have not been worked for some time. Under the new ownership of a syndicate, they will be at once re-opened. Coal mining in the foothills was once the leading industry of Contra Costa County. The supply of coal in the mines has hardly been touched.

IDAHO

Boise—Articles of incorporation have been filed with the proper authorities by the Neal Coal Mining Co., which will operate in Idaho county. The company is capitalized at $500,000. Several geologists have declared that the indications for coal are unusually good.

ILLINOIS

Bloomington—The creation of two committees, one to act as an emergency coal distributing agency, the other to bring pressure to bear upon the McLean County Coal Co. to keep its mine open and to send a telegram to President Wilson asking for action against coal profiteers, were the results of a mass meeting held in an effort to bring relief to the coal situation. The meeting was attended by citizens of Bloomington and Normal and the real issue was to urge the McLean County Coal Co. to operate the local mine and to influence the coal miners to end the "vacation strike" which has been in progress.

Benton — Improvements on a large scale are being made by the Big Muddy Co. at its New Virginia mine in Williamson County. The cost of the improvements will aggregate more than $75,000.

KENTUCKY

Middlesboro—The Kentucky Coal & Railroad Co. is being organized and will shortly incorporate with a capital of $1,500,000 for development of properties in Breathitt, Knott and Perry Counties. These properties have 5 seams of coal, including gas and steam, 42 inches to 7 feet thick. Main offices will be at Middlesboro. Operations are planned to start about January 1. Seven miles of rail will be laid to connect with the Louisville & Eastern Division of the L. & N. R.R.

Garrett—The Standard-Elkhorn Coal Co. has perfected plans for the erection of a new steel tipple on its properties. Machinery will be installed at an early date.

Hazard—The Carrs Fork Coal Co. has filed amended articles increasing its capital from $300,000 to $400,000, and changing main office to Allcock, Ky.

Whitesburg—Reports from Eastern Kentucky, in the vicinity of Whitesburg, state that the Cumberland Hazard Coal Co., near Ice, is erecting a large powder house, and will build a new chute and tipple, as well as storage bins.

Louisville—The Turkey Creek Coal Co. has been incorporated with a capital of $1,000,000, for expansion. The incorporators are F. J. Wagner, J. C. Reddick of Louisville, and J. J. Lidwick of Cloverdale, Mich.

Near Dalna in the Smoot Creek section, the Consolidated Fuel Co. is erecting one of the largest storage bins in the state. The company is also doing work at Blackey, where it took over the Woodburn Coal Co. It is further reported that improvements are under way at the plants of the Kenmont Coal Co., Storm King Coal Co., Reliance Coal & Coke Co., all of which are making plans for larger production.

It is reported that five small mines, now affiliated with the Western Kentucky Coal Operators Association, have signed up with the strikers on a proposed new wage scale, which has been turned down by the organized operators. These mines — in Henderson County—are the Bluff City, Dixie, Jennings, Nicholson and Corydon mines. The Kleiderer, Robards, Zion and Smith Mills mines have continued operation, two being non-union.

MISSOURI

Kansas City—The Kansas City Prudenized Coal Co. has been organized with a capitalization of $250,000. Project is a local one and is controlled by Kansas City men. The new concern will manufacture powdered coal and will also handle equipment used in burning this fuel. The use of powdered coal will be established through patent rights covering the Pruden process. Promotion of the use of this fuel in domestic plants will be pushed. Powdered coal will be stored and delivered in steel tanks, such as those used for fuel oil. Similar organizations being formed in Omaha, Buffalo and Salt Lake City.

OHIO

Crooksville—Contracts for the big tipple and buildings at the New York Coal Co. mines on the Vincent Gossman farm, east of Crooksville, will be let and actual development work will be in progress shortly.

The new mine will tap a 3,500-acre block of coal will give employment to about 300 men and when in full operation will have a daily output of more than 1,500 tons per day.

A deal was closed in Columbus

Operating Conditions at Indiana Coal Mines, August, 1920

PREPARED BY JONAS WAFFLE, SECRETARY INDIANA COAL TRADE BUREAU

Railroads on Which Mines Are Located	District	No. of Mines	Tons Produced	Full Time Capacity (Tons)	— Tons Lost and Causes Therefor — Total All Causes	Car Shortage	Labor Trouble	Mine Disability
Big Four	Terre Haute	6	69,746	115,761	46,015	21,515	23,333	1,167
B. & O. S. W.	Vincennes	2	20,926	45,248	24,322	3,652	20,610	60
	Clinton	27	209,047	378,453	169,406	27,841	132,729	8,836
C. & E. I.	[1] Sullivan [2]	16	175,208	280,309	105,101	18,845	72,341	13,915
	Total	43	384,255	658,762	274,507	46,686	205,070	22,751
C. I. & W.	Dana	1	9,333	12,802	3,469	573	2,896	.....
Cent. Ind.	Brazil	1	2,871	4,389	1,518	.....	1,518	.....
	Clinton	14	187,691	328,417	140,726	37,149	101,063	2,514
C. T. H. & S. E.	Linton [3]	27	226,054	394,810	168,756	44,820	114,410	9,526
	Total	41	413,745	723,227	309,482	81,969	215,473	12,040
E. & I.	Clay City, Petersburg	11	94,588	200,299	105,711	32,202	61,067	12,442
E. & E.	Evansville	2	12,000	12,605	605	70	535	.....
E. S. & N.	Evansville	4	26,154	35,184	9,030	2,717	6,071	242
Ill. Cent.	Linton	6	60,724	109,269	48,545	10,933	32,032	5,580
Monon	Linton [4]	21	163,273	315,108	151,835	10,146	119,475	22,214
	[5] Main Line	20	175,355	311,529	136,174	35,862	81,144	19,168
P. C. C. & St. L.	[6] Vincennes	20	256,007	720,917	464,910	202,677	222,575	39,658
	Total	40	431,362	1,032,446	601,084	238,539	303,719	58,826
	Ayrshire	7	43,522	96,954	53,432	25,665	20,878	6,889
Southern	Boonville	8	71,989	104,633	32,644	11,836	18,507	2,301
	Total	15	115,511	201,587	86,076	37,501	39,385	9,190
Totals		193	1,804,488	3,466,687	1,662,199	486,503	103,184	144,512
Totals for month ending July 31, 1920		191	1,716,793	3,440,205	1,723,412	796,659	764,777	161,976

([1]) Includes all mines South of Terre Haute. ([2]) Two mines served by two railroads. ([3]) One mine served by two railroads. ([4]) Four mines served by two railroads. ([5]) Includes all mines on St. Louis and Michigan Divisions. ([6]) Includes all mines on Vincennes Division and Dugger Branch.

whereby the property of the Zanesville Coal Co. was transferred to the Seneca Coal Co. of Columbus. The property includes the company's mines in the vicinity of Crooksville and McLuney with an output of 1,500 tons daily and a valuable tract of 3,000 acres of undeveloped Coal land. Hayden-Miller & Co. of Cleveland, and W. L. Timmons, of Zanesville, Ohio, were associates of the Zanesvlile Coal Co. It is understood to be the intention of the new owners to operate the mines to full capacity, and the property will be further developed.

Canaanville—The Canaan Coal Co. has awarded a contract for the construction of a one-story boiler plant addition to its present works, estimated to cost about $50,000. Rust Engineering Co., 1901 Fifth Avenue, Pittsburgh, Pa., is the engineer and contractor.

Columbus—The Faye Coal Co. has been chartered with a capital of $150,000 to mine and sell coal. The company has closed a deal for the purchase of a working mine at Corning. The product will be sold through the company's office in Columbus.

PENNSYLVANIA

Beachley—The operations of the Shawnee Coal Co. in Somerset County, Pa., have been purchased by a syndicate of Johnson and Windber men, the consideration being close to $100,000. The output of the mine will be doubled, according to announcement.

Rockwood—A new record for earnings was established in Somerset County, when John Vought, Jr., of Black township, drew $459.99 as pay for a two-week period in August. Miner was employed in operation of the Berkey Bros., near Fraunheim.

Kantner—Coal developments in the local fields are progressing rapidly. New openings and a tipple with side tracks, attracting attention near the Stoyestown station, are the work of D. B. Specht, operating as the D. B. Specht Co. This is considered one of the most complete plants in Somerset County. About one mile north of Kantner, along the Baltimore & Ohio R.R., the Hilcrest Coal Co., is almost ready to begin shipping coal. J. H. Tipton, superintendent and manager, is arranging for the construction of dwelling houses in the near future. On the opposite side of Stony Creek from the Hilcrest operations, some Johnstown men are rapidly developing the Triangle Coal Co., about 275 acres of the best coal in this section. The openings, with tipple and sidings, are being fitted for extensive business.

Harrisburg — Two anthracite coal companies have recently filed notices of increase in capital stock. The Central Coal Co., of Scranton, increased its capitalization from $100,000 to $185,000. The president is A. F. Wolf, and the company operates in Luzerne County. The Avoca Coal Co., which operates in Lackawanna County, has increased its capital stock from $25,000 to $100,000.

Altoona—Coal production in the Wopsonnock field has been started and promises plenty of coal for local consumption. Mines are being operated by both the Montvale Coal Co., the concern that is operating the Northern Central R.R. and the Blair-Cambria Coal Co., and by the Garman Co. The new Fairview tipple is not being used, but it is expected that the Montvale company will take it over in the near future. This will insure a supply of coal for Altoona.

Brownsville—The Cook & Robbins Coal Co. has completed plans for the erection of a trestle and steel coal tipple at its plant, estimated to cost $15,000. J. M. Beall, Trust Building, Monessen, Pa., is architect.

Uniontown — Several tons of slate horribly mangled the remains of John Hobosky, aged 50, when he was instantly killed in the Leith mine of the Frick Coke Co., near here.

VIRGINIA

Christiansburg—The National Collieries Co., recently organized with a capital of $2,000,000, are planning for the development of coal properties in this district and a large daily output is anticipated. David F. Reid is president, Hunter J. Phlegar, secretary, and Guy F. Ellett, treasurer.

WASHINGTON

Centralia—Articles of incorporation were recently filed by the Tilton River Bituminous Coal Co., at Olympia. The new company capitalized at $300,000 is organized to develop coal properties at Lindberg, in eastern Lewis County. The home office will be maintained in Tacoma, with a temporary branch office here. The Tacoma & Eastern R.R. passes through the new company's property, which consists of 2,680 acres, underlaid with workable bituminous coking coal of the highest grade. This tract is the natural outlet for the coal contents of at least 3,000 additional acres.

WEST VIRGINIA

Grafton—The Jerry Run Coal Co., recently organized, is planning for the development of 130 acres of coal property, to have a daily capacity of about 1,500 tons. Machinery will be installed at an early date.

Fairmont—The plant and property of the North Fairmont Coal Co., at Hildebrand, in Monongalia county, has changed hands, having been acquired by H. J. Booth and associates of Pittsburgh, Pa., who are interested rather extensively in the manufacture of glass products. In acquiring the Hildebrand mine Mr. Booth also secured 332 acres of Pittsburgh gas coal, at an expenditure, it is understood, of $500,000.

Huntington—A new coal company has been launched by Huntington business men, known as the Mountain State Coal Corporation, this concern having a capitalization of $500,000. As to just where the company will operate, it has not been so far announced. Chiefly interested in the new company are C. T. Benton, R. B. Campbell, F. A. Steward, S. S. McNeer and F. M. Livezey.

Huntington people have formed a coal company for the purpose of developing properties in Greenbrier County. This company will be known as the Darknet Coal Co., with a capital stock of $500,000. Among those having an active part in the formation of the new concern are: S. J. Hyman, E. J. Payne, A. B. Hyman, N. J. Pugh and John S. Marcum, all of Huntington.

Bluefield—A. J. Clyborne and associates of Bluefield having purchased the stock of the Rocky Branch Coal Co. operating at Lex, W. Va., have organized the Purity Pocahontas Coal Co. to operate the Lex mines, the newly organized corporation being capitalized at $150,000. The Lex mines are on the Dry Fork branch of the Norfolk & Western R.R. Output will be materially increased by numerous improvements involving a large outlay of money.

Morgantown—In order to eliminate unnecessary handling of slack, the Bertha Coal Co. is having a storage basin constructed, a conveyor system leading to the slack basin from the screens. The slack so stored can be loaded on to cars from the basin through the use of gates at the bottom of the basin, and another conveyor.

Shinnston—The Basin Coal Co. will operate near this place, having been organized by F. O. Denar of Fayette City, Pa., and others, among whom are Louis A. Johnson, Philip P. Steptoe, Leo P. Caulifield and D. D. Holtz of Clarksburg, W. Va. The new company is capitalized at $300,000

Charleston—The Grosvenor Coal Sale Co. of Charleston has been formed by Dr. H. C. Jones and others of Charleston, among them being A. P. Kilburn, J. G. Pettet, B. M. Ruffner and Isabell J. Pettet. The company has a capital stock of $25,000.

WISCONSIN

Appleton—The newly organized Appleton Peat Products Co., has acquired 360 acres of peat land and plan extensive fuel manufacturing here. It is estimated that 4,000 tons of fuel will be the yield per acre. Specially constructed machinery will be used to manufacture briquettes. The first unit of the plant will be started within 30 days.

BRITISH COLUMBIA

Princeton—W. J. Blake Wilson, president of the Coalmont Collieries, near here, has announced that the new aerial tramway that is to convey coal from the mine to the railway will shortly be in operation. By the middle of December it is hoped to bring the output up to 1,000 tons daily. The company is working a huge seam, which runs up to 28 feet in thickness, with a few clay-slate partings that easily are separated from the coal.

Traffic News

I. C. C. Decision.—Investigation and Suspension Docket 1178. Proposed cancellation of joint rates on bituminous coal from Buffalo, Rochester & Pittsburgh Ry. stations between Vintondale, Pa., and Josephine, Pa., to Eastern points, including Tidewater, found to have been justified, and order of suspension vacated.

I. C. C. Order.—Investigation and Suspension, Docket 1170. Proposed cancellation of joint rates on coal from mines on Sewell Valley R.R. to destinations on the Chesapeake & Ohio Ry. and its connections found not justified. The suspended schedules ordered cancelled.

I. C. C. Decision. No. 10699. Rates charged by the Lehigh Valley R.R. for the transportation of anthracite coal from mines in Pennsylvania to Auburn, N. Y., found to have been and to be unduly prejudicial to the extent that they exceeded or may exceed those contemporaneously charged to Seneca Falls and Naples, N. Y. Reparation denied.

Industrial News

New York, N. Y.—Dwight P. Robinson & Company, Inc., (with which Westinghouse, Church, Kerr & Co., Inc., has recently consolidated) engineers and contractors, has established a new branch office in Youngstown, Ohio, in the Home Savings & Loan Building, in charge of C. I. Crippen. The company recently moved its Cleveland office from the Leader-News Building to the Citizens Building, and H. P. Clawson, who was for several years a member of the Chicago staff, has been transferred to take charge of this office. The company now maintains branch offices in Pittsburgh, Youngstown, Cleveland, Chicago, Dallas and Los Angeles, and Sao Paulo, Brazil.

Buffalo, N. Y.—The Jeffrey Manufacturing Co., Columbus, Ohio, have opened a branch office at 1108 Marine Trust Bldg., in charge of H. W. Scott, formerly of the home office.

Pittsburgh, Pa.—A full-sized mine, a model only in that it yields no coal, is the latest practical addition at Carnegie Tech. The mine has been constructed under the division of science and engineering building and when school is opened this fall students of the coal-mining department will have one of the finest mines of its kind in which to make their experiments. Machinery and a mine locomotive will be installed within the next few weeks.

Philadelphia, Pa.—The Valley Smokeless Coal Co. announces that all purchasing for that concern will be done from offices of Weston Dodson & Co., Inc., Bethlehem, Pa., and affiliated companies. J. B. Connell is general purchasing agent.

Philadelphia, Pa.—The office of F. E. Clark, deputy commissioner of the Tidewater Coal Exchange, Inc., has been removed to the Dencla Bldg., 10th and Market Sts.

Baltimore, Md.—Acting Deputy Commissioner J. A. Biddison, Tidewater Coal Exchange, Inc., is now located in the Lexington Bldg., Liberty and Lexington Sts.

Personals

B. W. K. Edmonds has been appointed Canadian manager with headquarters in Montreal for W. H. Bradford Co., Inc., of Philadelphia.

M. L. Hyde, fuel and heating engineer, has been appointed by the Alberta authorities to represent that province in Winnipeg, to inspect and advise on sales and distribution of Alberta's coal.

A. F. Hilleke, who has been district manager for the Semet-Solvay Co., with supervision over the plants and properties of the company in Alabama, has been appointed general superintendent of operations with headquarters in Syracuse, N. Y. Mr. Hilleke has been identified with civic and industrial activities in this district for the past 25 years, and supervised the construction of several coke plants of the Semet-Solvay type in Alabama, the last of which was the $6,000,000 byproduct works of the Sloss-Sheffield Steel & Iron Co. at North Birmingham. The name of Mr. Hilleke's successor has not been announced.

After ten and a half years of service with the Consolidation Coal Co., **R. P. Hines** has resigned as head of the power and mechanical department to become the electrical engineer of the Fairmont & Cleveland Coal Co. A graduate of Vanderbilt, Mr. Hines entered the service of the Consolidation Coal Co. after having been for a time with the General Electric Co. He was made superintendent of the power and mechanical department of the Consolidation on June 1, 1919.

Charles R. Martin, formerly chief clerk of the Fairmont office of the Jamison Coal & Coke Co. has been made superintendent of the Marion Gas Coal Co. and of the Wyatt-Bingamon Coal Co., and has moved his headquarters to Bingamon.

Gail Fishback, chief car distributor of the Baltimore & Ohio R.R. at Grafton, has resigned to accept the post as Fairmont representative of the Arkwright Coal Co. Mr. Fishback was for a time car distributor of the B. & O. at Fairmont. His services with the B. & O. covered a period of 20 years.

A. Hallam Christian has been appointed as the Huntington representative of the Old Dominion Coal Co. He has been connected with coal companies in the Logan field.

Matthew G. Siener, formerly sales agent of the Pittsburgh & Shawmut Coal Co. at Buffalo, has been elected vice-president of the P. O. McIntire Coal Co. of Cleveland, and will represent the company in Buffalo, having opened an office at Room 32 Naylor Building.

L. Everett White, for the past several months connected with the W. E. Deegans Consolidated Coal Co. as Division Engineer, Logan County Division, has resigned to accept a position as Assistant to the General Manager of the Cerro de Pasco Copper Corporation, operating coal and mineral mines in Peru, South America. Mr. White will sail for South America early in October.

A. R. Lee, former General Freight Agent of the Chicago and Alton Ry., will be in charge of a group of central Illinois coal mines. He has been appointed vice-president and general manager of the Union Fuel Co., which recently purchased mines at Auburn, Selbytown and other shafts along the Alton in the Springfield district.

Byford C. Tynes, attorney of Huntington, has been designated as general manager of the Kountze interests in West Virginia, dominant in the affairs of the United Thacker Coal Co. Mr. Tynes appointment was announced by T. Irving Madden, president of the company. Mr. Tynes represented the company in securing an injunction in the Federal Circuit Court restraining certain surface owners from removing timber and he also had a prominent part in negotiating leases for the development of the Kountze holdings on Pigeon Creek in West Virginia.

Lewis Littlepage, for 18 years Tidewater agent of the Winding Gulf Colliery Co., has been made Eastern agent of the company with headquarters in New York. That announcement has been made by Justus Collins, president of the Winding Gulf Company in connection with the announcement that **J. A. Renahan,** vice president and general manager of the company since it was organized, has retired. **George Buntino** has been made Tidewater agent, with headquarters at Norfolk. He was for a number of years Mr. Littlepage's assistant.

Chas. F. Wainwright, for the past two years salesman for the Rutledge & Taylor Coal Co., of Chicago, has resigned and joined the Lafayette Coal Co., of Chicago. W. E. Brandt, also formerly of the Rutledge Taylor concern, is now president of the Lafayette Coal Co.

W. Ewart James has been appointed general superintendent of the Beards Fork operation of the Loup Creek Colliery Co., Page, W. Va. Mr. James was formerly connected with the Elkhorn Piney Coal Mining Co.

B. J. Wallatt, Assistant State Geologist for Indiana has resigned to accept a position in the faculty of Technical high schools. **L. S. Ferguson** has been appointed to fill the vacancy. Mr. Ferguson has been associated with Dr. G. N. Logan, State Geologist, in field work.

Trade Catalogs

Jeffrey Mine Locomotives. Jeffrey Manufacturing Co., Columbus, Ohio. Catalog 263. Pp. 55; 8½ x 11 in.; illustrated. Data on construction of mine locomotives.—Advertiser.

Storage Battery Locomotives. Jeffrey Manufacturing Co., Columbus Ohio. Catalog 312. Pp. 20; 7½ x 10½ in.; illustrated. Useful data, tables and descriptions of storage battery mine locomotives.—Advertiser.

Core Drilling by Contract. Sullivan Machinery Co., Chicago, Ill. Booklet 122. Pp. 32; pocket size; illustrated. Setting forth facilities of the company for undertaking boring contracts of all sorts.—Advertiser.

Sullivan Rotators. Sullivan Machinery Co., Chicago, Ill. Bulletin 70-J, replacing 70-F. Pp. 28; 6 x 9 in.; illustrated. Description of DP-33, DP-32 and DR-37 drilling machines.—Advertiser.

Reading Wrought Iron Pipe. Reading Iron Co., Reading, Pa. Bulletin 1. Pp. 31; 8½ x 11 in; illustrated. Describing the manufacture and uses of wrought iron pipe.—Advertiser.

Lidgerwood Steam Hoisting Engines. Lidgerwood Manufacturing Co., New York, N. Y. Bulletin 2. Pp. 52; 9 x 11½ in.; illustrated. Specifications of construction details of steam hoists.—Advertiser.

G. E. Insulating Compounds. General Electric Co., Schenectady, N. Y. Bulletin 48704-A. Pp. 15; 8 x 10½ in.; illustrated. Presents the principal characteristics of insulating and coating materials.—Advertiser.

Obituary

Otto F. Stifel, owner of the Pocahontas mine at Greenview, Ill., killed himself recently at his home in St. Louis. He was well known in Illinois and vicinity, having recently during the last walkout of the Illinois miners, made a separate settlement with his men, whereby his mine worked while the others were idle.

James Lea Paull, Pittsburgh, Pa., died recently at the home of his son in Buffalo, N. Y. Mr. Paull was 74 years of age and a pioneer coke operator of the Connellsville region.

William James, Pottsville, Pa., 49 years of age, died recently at the Shamokin Hospital from the effects of burns received in the blast of a bursting steam chest. Mr. James was the head of the Shipman Coal Co., operating the Colbert colliery near Shamokin, and was doing emergency duty as a fireman when killed.

John W. Wilson, President of the Wilson Smokeless Coal Co. and of the Trace Fork Coal Co. and General Manager of the Wyoming Coal Co., died at Harrisonburg, Va. Mr. Wilson had been in the New River fields for 20 years. Of late he had been identified with the interests controlled by W. P. Tams, Jr.

Coming Meetings

Coal Mining Institute of America will hold its annual meeting Dec. 8, 9 and 10, 1920, in the Chamber of Commerce Auditorium, Pittsburgh, Pa. Secretary, H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15. Secretary, J. F. Callbreath, Munsey Building, Washington, D. C.

The Canadian Institute of Mining and Metallurgy will hold its second annual western meeting at Winnipeg on Oct. 25, 26 and 27. Headquarters will be at the Hotel Fort Garry. Local secretary, W. W. Berridge, 905 Union Trust Building, Winnipeg, Can.

The National Association of Purchasing Agents will hold its annual convention at the Congress Hotel, Chicago, Ill., Oct. 11, 12 and 13. Secretary, L. F. Boffey, 25 Beaver St., New York City.